OPEN
Industry Standard, Flexible Architecture

GREEN
Less Heat, Less Power Consumption

STABLE
Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

EP2C612D16FM
EP2C612D16FM-N

User Manual

Version 1.0
Published August 2014
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(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

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Contact Information

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Chapter 1 Introduction

Thank you for purchasing ASRock Rack ***EP2C612D16FM / EP2C612D16FM-N*** motherboard, a reliable motherboard produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

In this manual, chapter 1 and 2 contains introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contains the configuration guide to BIOS setup and information of the Support CD.

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock Rack website without further notice. You may find the latest memory and CPU support lists on ASRock Rack website as well. ASRock Rack's Website: www.ASRockRack.com

If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.
www.asrock.com/support/index.asp

1.1 Package Contents

- ASRock Rack EP2C612D16FM / EP2C612D16FM-N Motherboard (ATX Form Factor: 12.0-in x 10.5-in, 30.5 cm x 26.7 cm)
- Support CD
- User Manual
- 4 x SATA3 Cables (50cm)
- 2 x MiniSAS Cables(6G) (60cm)
- 1 x I/O Shield

If any items are missing or appear damaged, contact your authorized dealer.

English

1.2 Specifications

EP2C612D16FM / EP2C612D16FM-N	
MB Physical Status	
Form Factor	SSI CEB
Dimension	12" x 10.5" (30.5 cm x 26.7 cm)
Processor System	
CPU	Intel® Xeon processor E5-2600/4600 v3 series
Socket	Dual Socket LGA 2011 R3
Chipset	Intel® C612
System Memory	
Capacity	16 DIMM slots
Type	- Quad Channel memory technology - Supports 2133/1866/1600 ECC DIMM, RDIMM, NVDIMM and LRDIMM
Voltage	1.2V
Expansion Slot	
Additional PCIe switch	**EP2C612D16FM:** Front Right Angle 2 x16 from each CPU to Midplane, total 4 x16 (need to bundle with ASRock Rack system board) **EP2C612D16FM-N:** N/A
Storage	
SATA Controller	Intel® C612 : 10 x SATA3 6.0 Gb/s (8 from 2 mini SAS connector + 2x SATA3 connector)
Additional SATA Controller	Marvell 9172: 2 x SATA3 6Gbps
Ethernet	
Interface	1000 /100 /10 Mbps
LAN	2 x RJ45 by Intel® i210 1 x RJ45 Dedicated IPMI LAN port - Supports Wake-On-LAN - Supports Energy Efficient Ethernet 802.3az - Supports Dual LAN with Teaming function - Supports PXE - LAN1 supports NCSI
Mezzanine	x8 Mezzanine slot supports mezzanine card with 2 x10G Ethernet or 2 xGLAN (2 x 10G Base-T by Intel X540 or 2 x SFP+ by Intel 82599ES or 2 x GLAN by Intel i350) - Supports NCSI

Management	
BMC Controller	ASPEED AST2400
IPMI Dedicated GLAN	- 1 x Realtek RTL8211E for dedicated management GLAN
Features	- Watch Dog - NMI
Graphics	
Controller	ASPEED AST2400
VRAM	DDR3 16MB
Rear Panel I/O	
VGA Port	1 x D-Sub
USB 3.0 Port	2
USB 2.0 Port	2
Lan Port	2 + 1 (IPMI) Lan port (RJ45) LAN Ports with LED (ACT/LINK LED and SPEED LED)
Serial Port	1 (COM1)
UID Button/ LED	1
Internal Connector	
Auxiliary Panel Header	1 (includes chassis intrusion, location button & LED, front LAN LED and system event LED)
TPM Header	1
IPMB Header	1
Fan Header	2x CPU Fan, 4x system Fan (4-pin)
ATX Power	1 (24-pin) + 2 (8-pin)
USB 3.0 Header	1 (support 2 USB 3.0)
USB 2.0 Header	1 (support 2 USB 2.0)
Type A USB 3.0 Port	1
Front Panel	1
Mezzanine slot	1 (from CPU 1)
Hardware Monitor	
Temperature	- CPU Temperature Sensing - MB Temperature Sensing - Card-side Temperature Sensing
Fan	- CPU/Rear/Front Fan Tachometer - CPU Quiet Fan (Allow CPU Fan Speed Auto-Adjust by CPU Temperature) - CPU/Rear/Front Fan Multi-Speed Control
Voltage	Voltage Monitoring: CPU1/2, VCCM_AB/CD/EF/GH, +1.50_PCH, 3V/5V/ 12V, +1.05V_PCH, +BAT, 3VSB, 5VSB

Support OS	
OS	Microsoft® Windows® - Server 2008 R2 SP1 (64 bit) - Server 2012 (64 bit) - Server 2012 R2 (64 bit) Linux® - RedHat Enterprise Linux Server 5.9/6.4 (32 / 64 bit) - CentOS 5.9 / 6.4 (32 / 64 bit) - SUSE Enterprise Linux Server 11 SP3 (32 / 64 bit) - FreeBSD 9.1 (32 / 64 bit) - Fedora core 19 (64 bit) - Ubuntu 12.04.2 (64 bit) / 12.10 (64 bit) Virtual - VMWare® ESXi 5.5 *(not supported for Marvell 9172)*
Environment	
Temperature	Operation temperature: 10°C ~ 35°C / Non operation temperature: -40°C ~ 70°C

This motherboard supports Wake from on Board LAN. To use this function, please make sure that the "Wake on Magic Packet from power off state" is enabled in Device Manager > Intel® Ethernet Connection I210 > Power Management. And the "PCI Devices Power On" is enabled in UEFI SETUP UTILITY > Advanced > ACPI Configuration. After that, onboard LAN1&2 can wake up S5 under OS.

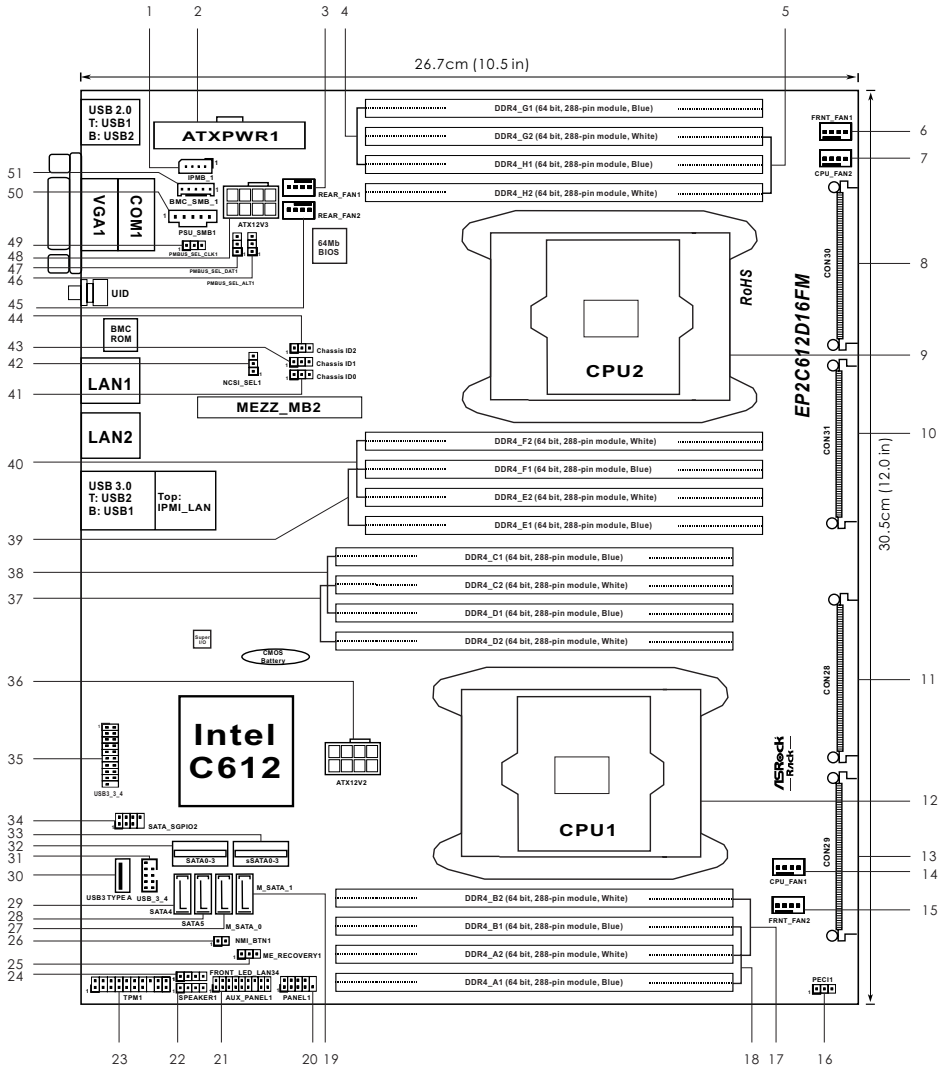
If you install Intel® LAN utility or Marvell SATA utility, this motherboard may fail Windows® Hardware Quality Lab (WHQL) certification tests. If you install the drivers only, it will pass the WHQL tests.

1.3 Unique Features

ASRock Rack Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press the <F6> key during the POST or the <F2> key to enter into the BIOS setup menu to access ASRock Rack Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

1.4 Motherboard Layout

EP2C612D16FM

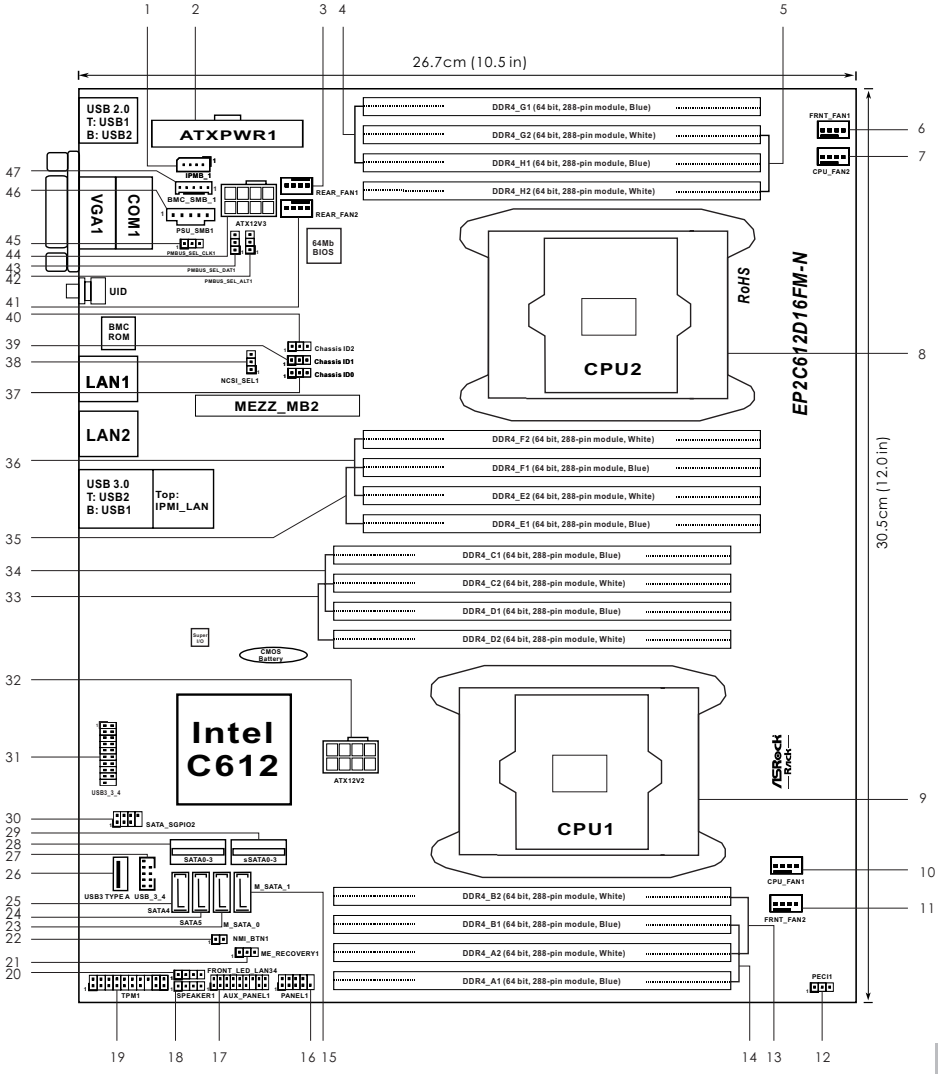


No.	Description
1	Intelligent Platform Management Bus header (IPMB_1)
2	ATX Power Connector (ATXPWR1)
3	Rear Fan Connector (REAR_FAN1)
4	2 x 288-pin DDR4 DIMM Slots (DDR4_H1, DDR4_G1, Blue)
5	2 x 288-pin DDR4 DIMM Slots (DDR4_H2, DDR4_G2, White)
6	Front Fan Connector (FRONT_FAN1)
7	CPU 2 Fan Connector (CPU2_FAN)
8	PCIE Switch Board Connector (CON30) (CPU2)
9	LGA 2011 CPU Socket (CPU2)
10	PCIE Switch Board Connector (CON31) (CPU2)
11	PCIE Switch Board Connector (CON28) (CPU1)
12	LGA 2011 CPU Socket (CPU1)
13	PCIE Switch Board Connector (CON29)(CPU1)
14	CPU 1 Fan Connector (CPU_FAN1)
15	Front Fan Connector (FRONT_FAN2)
16	CPU PECI Jumper (PECI1)
17	2 x 288-pin DDR4 DIMM Slots (DDR4_A2, DDR4_B2, White)
18	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1, Blue)
19	SATA3 Connector (M_SATA_1), White
20	System Panel Header (PANEL1)
21	Auxiliary Panel Header (AUX_PANEL1)
22	Speaker Header (SPEAKER1)
23	TPM Header (TPM1)
24	Front Lan LED Connector (FRNT_LAN34)(For Mezzanine Card)
25	ME Recovery Jumper (ME_RECOVERY1)
26	Non Maskable Interrupt Button (NMI_BTN1)
27	SATA3 Connector (M_SATA_0), White
28	SATA3 Connector (SATA5), White
29	SATA3 Connector (SATA4), White
30	Vertical Type A USB 3.0 (USB3_5)
31	USB 2.0 Header (USB_3_4)
32	mini SAS Connector (SATA0-3)
33	mini SAS Connector (sSATA0-3)

No.	Description
34	SATA SGPIO Connector (SATA_SGPIO2)
35	USB 3.0 Header (USB3_3_4)
36	ATX 12V Power Connector (ATX12V2)
37	2 x 288-pin DDR4 DIMM Slots (DDR4_C2, DDR4_D2, White)
38	2 x 288-pin DDR4 DIMM Slots (DDR4_C1, DDR4_D1, Blue)
39	2 x 288-pin DDR4 DIMM Slots (DDR4_E1, DDR4_F1, Blue)
40	2 x 288-pin DDR4 DIMM Slots (DDR4_E2, DDR4_F2, White)
41	Chassis ID0 Jumper (Chassis ID0)
42	NCSI Mode Jumper (NCSI_SEL1)
43	Chassis ID1 Jumper (Chassis ID1)
44	Chassis ID2 Jumper (Chassis ID2)
45	Rear Fan Connector (REAR_FAN2)
46	PMBUS Mode Jumper (PMBUS_SEL_ALT1)
47	PMBUS Mode Jumper (PMBUS_SEL_DAT1)
48	ATX 12V Power Connector (ATX12V3)
49	PMBUS Mode Jumper (PMBUS_SEL_CLK1)
50	PSU SMBus (PSU_SMB1)
51	BMC SMBus Header (BMC_SMB_1)

**For DIMM installation and configuration instructions, please see p.19 (Installation of Memory Modules (DIMM)) for more details.*

EP2C612D16FM-N

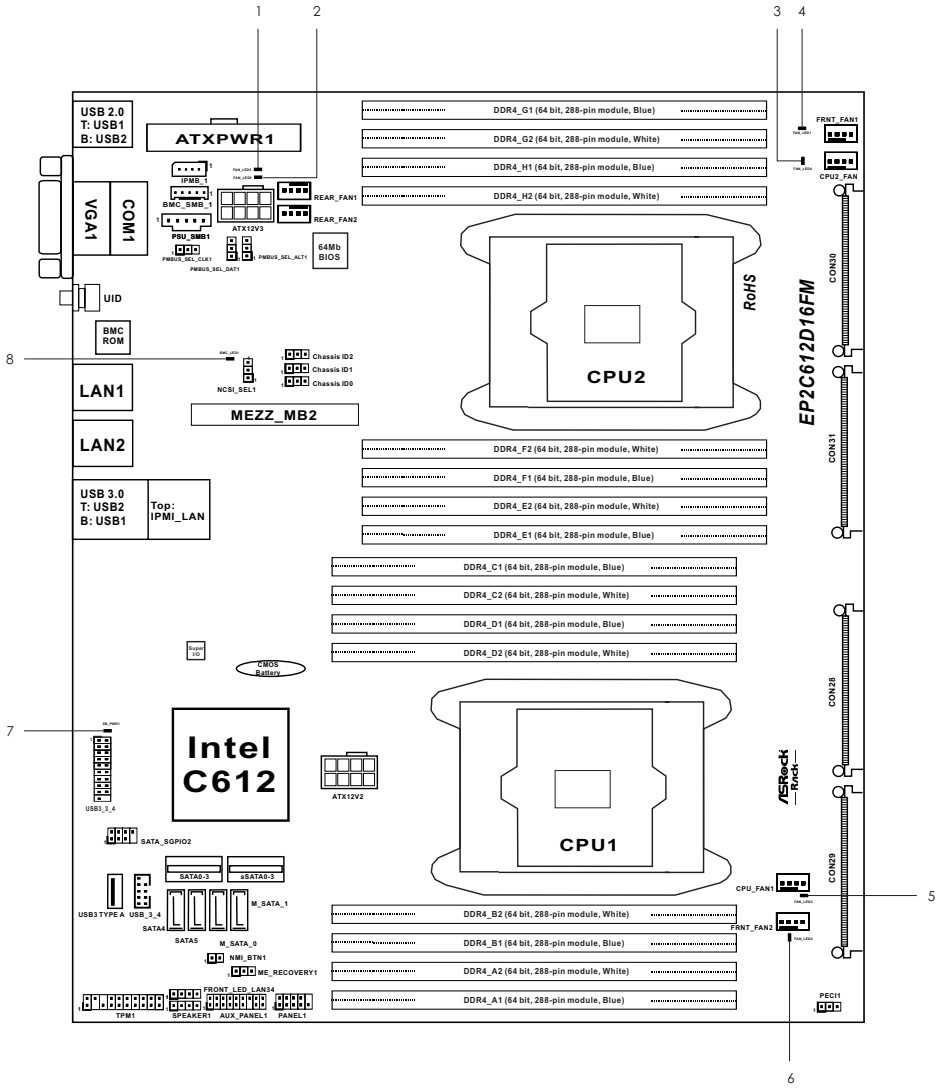


No.	Description
1	Intelligent Platform Management Bus header (IPMB_1)
2	ATX Power Connector (ATXPWR1)
3	Rear Fan Connector (REAR_FAN1)
4	2 x 288-pin DDR4 DIMM Slots (DDR4_H1, DDR4_G1, Blue)
5	2 x 288-pin DDR4 DIMM Slots (DDR4_H2, DDR4_G2, White)
6	Front Fan Connector (FRONT_FAN1)
7	CPU 2 Fan Connector (CPU2_FAN)
8	LGA 2011 CPU Socket (CPU2)
9	LGA 2011 CPU Socket (CPU1)
10	CPU 1 Fan Connector (CPU_FAN1)
11	Front Fan Connector (FRONT_FAN2)
12	CPU PECI Jumper (PECI1)
13	2 x 288-pin DDR4 DIMM Slots (DDR4_A2, DDR4_B2, White)
14	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1, Blue)
15	SATA3 Connector (M_SATA_1), White
16	System Panel Header (PANEL1)
17	Auxiliary Panel Header (AUX_PANEL1)
18	Speaker Header (SPEAKER1)
19	TPM Header (TPM1)
20	Front Lan LED Connector (FRNT_LAN34)(For Mezzanine Card)
21	ME Recovery Jumper (ME_RECOVERY1)
22	Non Maskable Interrupt Button (NMI_BTN1)
23	SATA3 Connector (M_SATA_0), White
24	SATA3 Connector (SATA5), White
25	SATA3 Connector (SATA4), White
26	Vertical Type A USB 3.0 (USB3_5)
27	USB 2.0 Header (USB_3_4)
28	mini SAS Connector (SATA0-3)
29	mini SAS Connector (sSATA0-3)
30	SATA SGPIO Connector (SATA_SGPIO2)
31	USB 3.0 Header (USB3_3_4)
32	ATX 12V Power Connector (ATX12V2)
33	2 x 288-pin DDR4 DIMM Slots (DDR4_C2, DDR4_D2, White)

No.	Description
34	2 x 288-pin DDR4 DIMM Slots (DDR4_C1, DDR4_D1, Blue)
35	2 x 288-pin DDR4 DIMM Slots (DDR4_E1, DDR4_F1, Blue)
36	2 x 288-pin DDR4 DIMM Slots (DDR4_E2, DDR4_F2, White)
37	Chassis ID0 Jumper (Chassis ID0)
38	NCSI Mode Jumper (NCSI_SEL1)
39	Chassis ID1 Jumper (Chassis ID1)
40	Chassis ID2 Jumper (Chassis ID2)
41	Rear Fan Connector (REAR_FAN2)
42	PMBUS Mode Jumper (PMBUS_SEL_ALT1)
43	PMBUS Mode Jumper (PMBUS_SEL_DAT1)
44	ATX 12V Power Connector (ATX12V3)
45	PMBUS Mode Jumper (PMBUS_SEL_CLK1)
46	PSU SMBus (PSU_SMB1)
47	BMC SMBus Header (BMC_SMB_1)

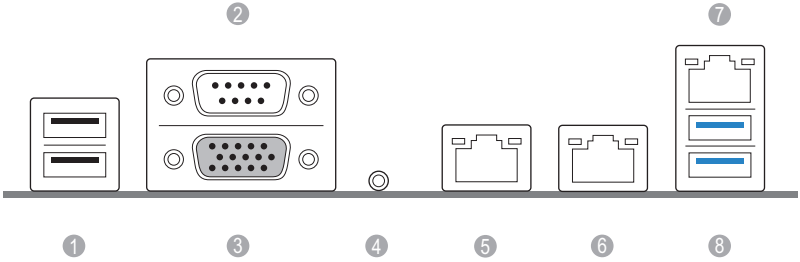
**For DIMM installation and configuration instructions, please see p.19 (Installation of Memory Modules (DIMM)) for more details.*

1.5 Onboard LED Indicators



No.	Status	Description
1	Amber	Rear_FAN1 failed
2	Amber	Rear_FAN2 failed
3	Amber	CPU2_FAN1 failed
4	Amber	Front_FAN1 failed
5	Amber	CPU1_FAN1 failed
6	Amber	Front_FAN2 failed
7	Green	STB PWR ready
8	Green	BMC heartbeat LED

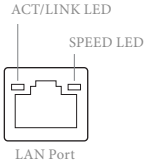
1.6 I/O Panel



No.	Description	No.	Description
1	USB 2.0 Ports (USB_1_2)	5	LAN RJ-45 Port (LAN1)**
2	Serial Port (COM1)	6	LAN RJ-45 Port (LAN2)**
3	VGA Port (VGA1)	7	LAN RJ-45 Port (IPMI_LAN)*
4	UID Switch (UID)	8	USB 3.0 Ports (USB3_1_2)

LAN Port LED Indications

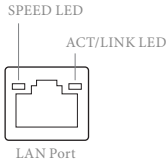
*There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.



Dedicated IPMI LAN Port LED Indications

Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10M bps connection or no link
Blinking Yellow	Data Activity	Yellow	100M bps connection
On	Link	Green	1Gbps connection

**There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.

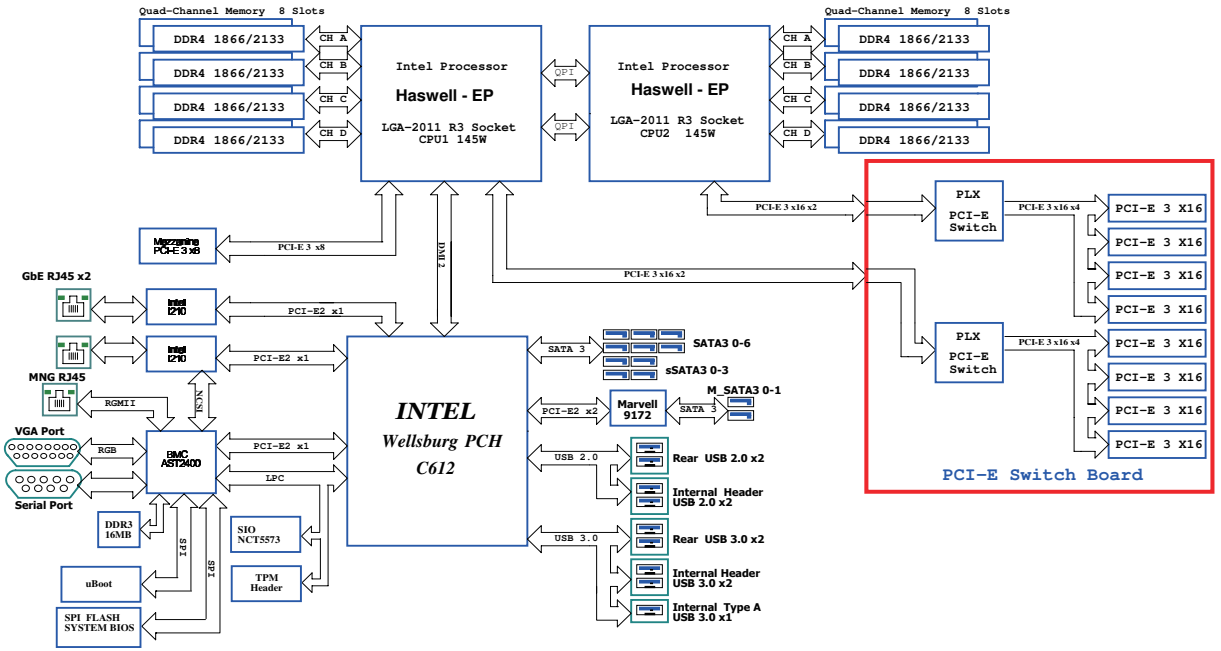


LAN Port (LAN1, LAN2) LED Indications

Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10M/100Mbps connection or no link
Blinking Yellow	Data Activity	Green	1Gbps connection
On	Link		

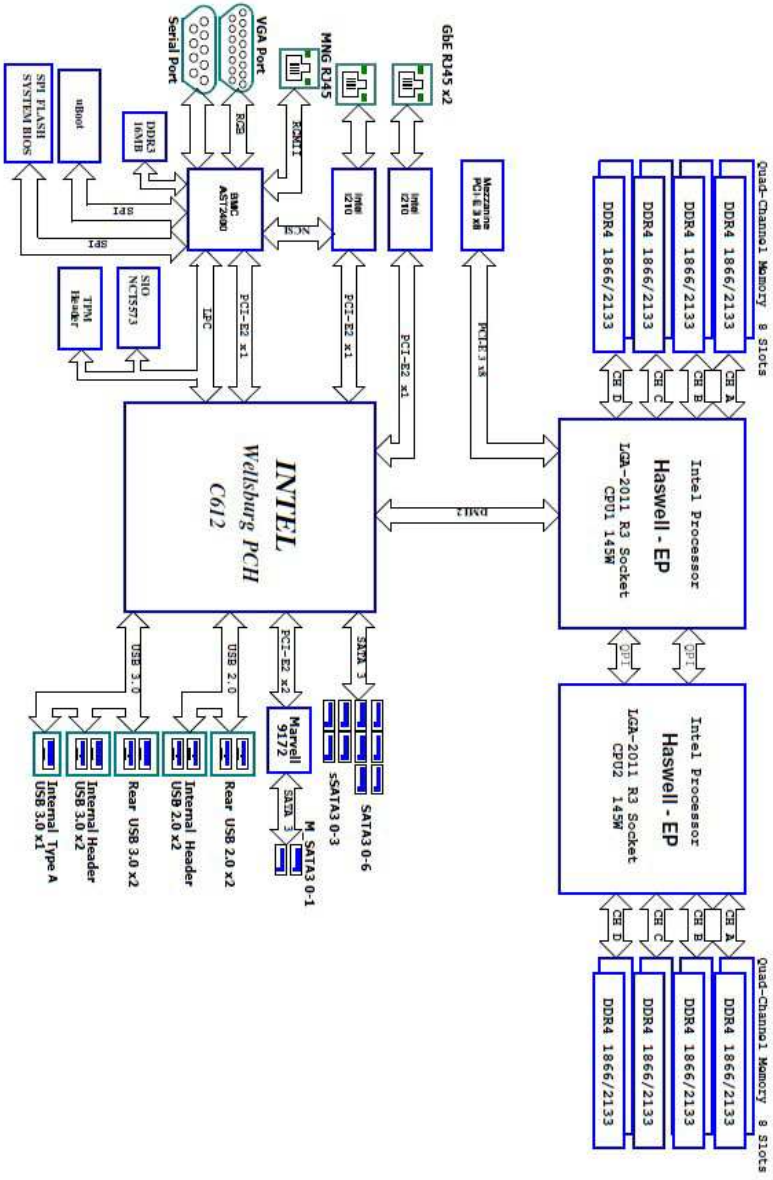
1.7 Block Diagram

EP2C612D16FM



English

EP2C612D16FM-N



English

Chapter 2 Installation

This is a CEB form factor (12" x 10.5", 30.5 cm x 26.7 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

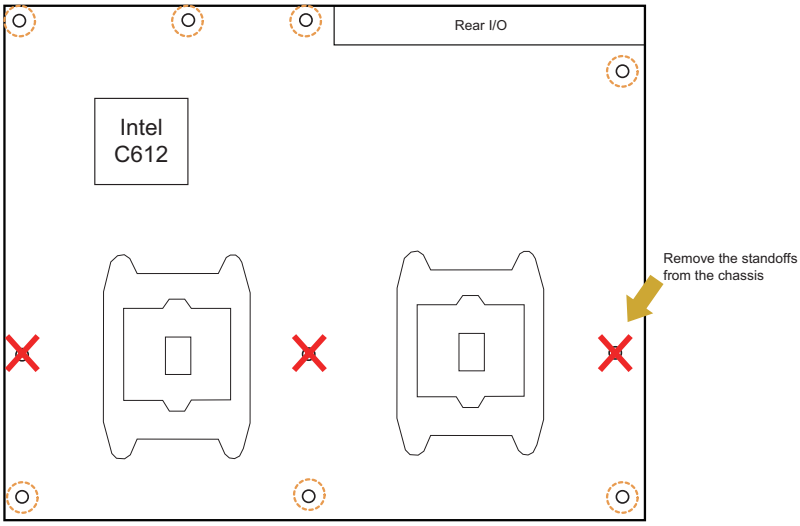
EP2C612 Series are dual socket motherboards that support Intel® Xeon® E5-2600 v3 Series Processors. Please install a primary processor (BootStrap Processor) into "CPU1" socket and then install a non-Primary Processor (Application Processors) into "CPU2" socket. *For a single CPU, please install it into "CPU1" socket (framed by a square).

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

Attention! Before installing this motherboard, be sure to unscrew and remove the three standoffs at the marked location, under the motherboard, from the chassis, in order to avoid electrical short circuit and damage to your motherboard.



Do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any components.
2. To avoid damaging the motherboard's components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded anti-static pad or in the bag that comes with the component.
5. When placing screws into the screw holes to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

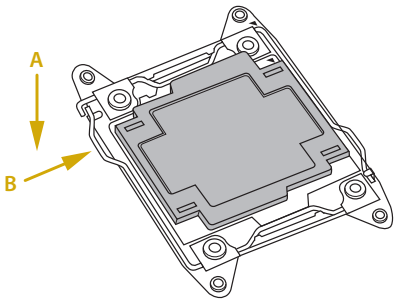
2.3 Installing the CPU

1. *Before you insert the 2011-3-Pin CPU into the socket, please check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.*
2. *Unplug all power cables before installing the CPU.*

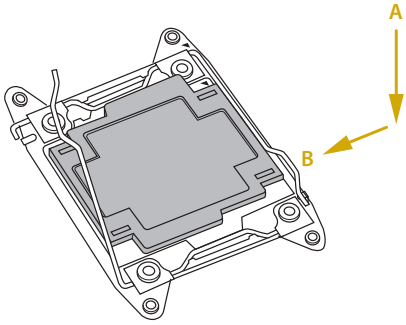
CAUTION:

Please note that C612 platform is only compatible with the LGA 2011-3 socket, which is incompatible with the LGA 2011 socket

1

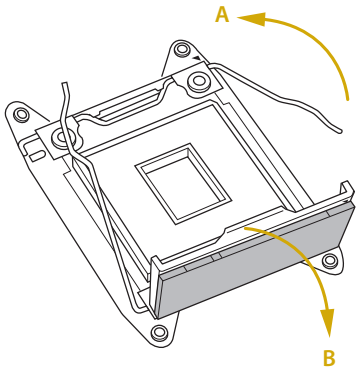


2

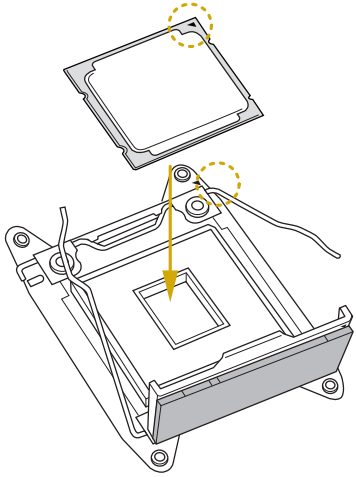


English

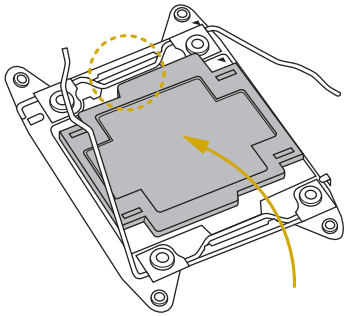
3



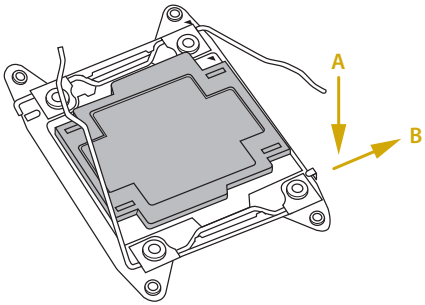
4



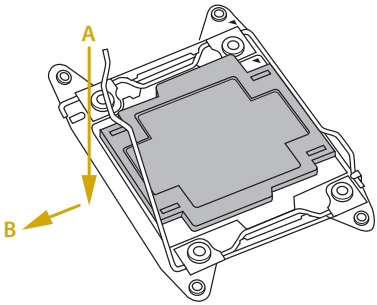
5



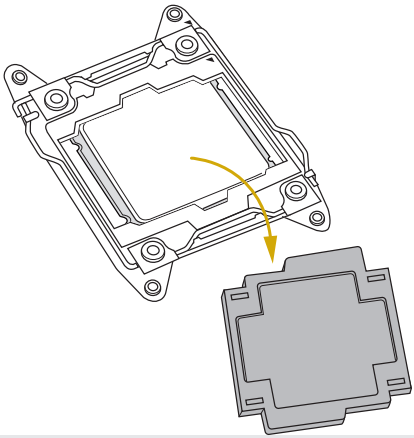
6



7



8

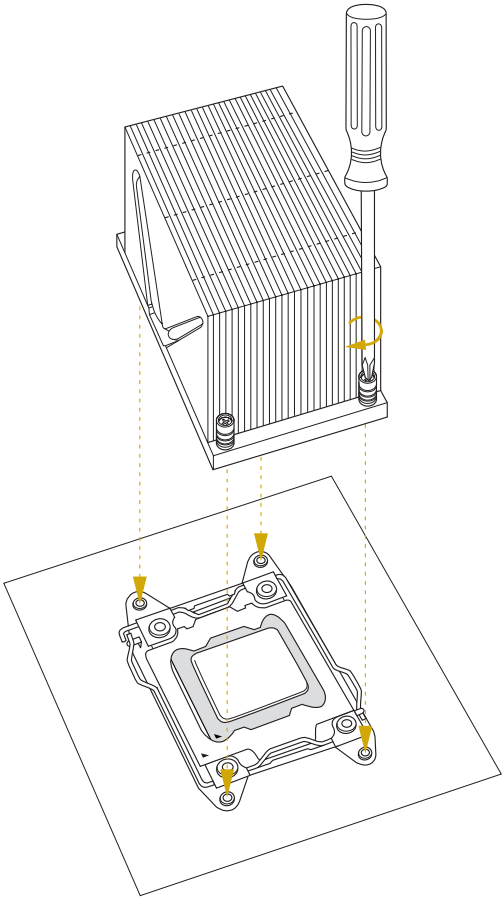


The cover must be placed if returning the motherboard for after service.

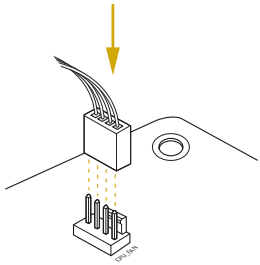
2.4 Installing the CPU Fan and Heatsink

Before you installed the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation.

1



2

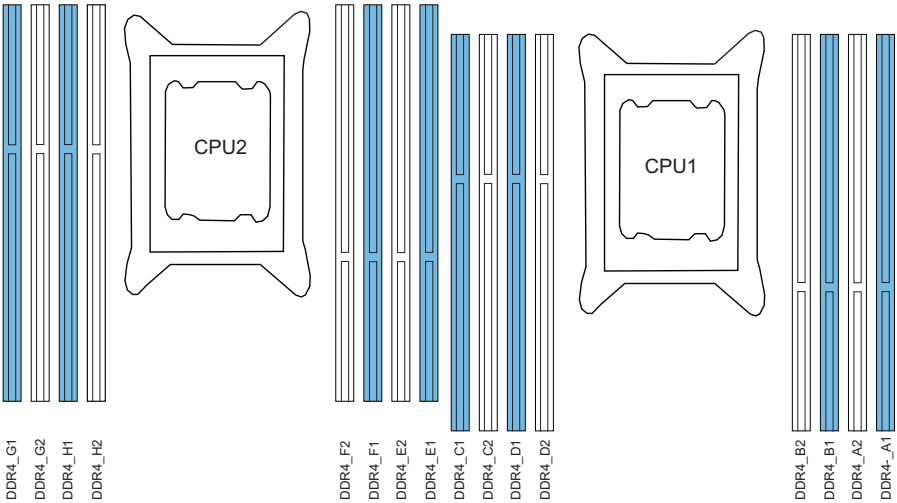


2.5 Installation of Memory Modules (DIMM)

This motherboard provides sixteen 288-pin DDR4 (Double Data Rate 4) DIMM slots in two groups, and supports Dual Channel Memory Technology.

You may install 2GB, 4GB, 8GB, 16 GB and 32GB RDIMMs, ECC UDIMMs, and LR-DIMMs into the sockets.

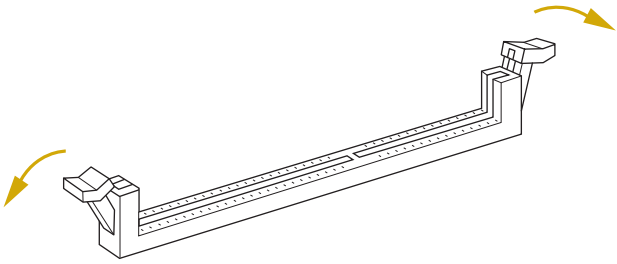
Capacity	CPU1	CPU2
256GB / 512GB	DDR4_A1, B1, C1, D1 (Blue)	DDR4_E1, F1, G1, H1 (Blue)
	DDR4_A2, B2, C2, D2 (White)	DDR4_E2, F2, G2, H2 (White)



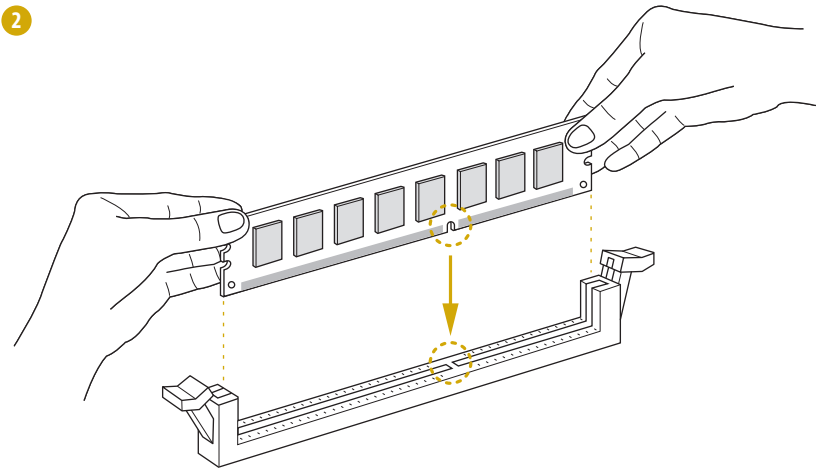
1. *It is not allowed to install a DDR, DDR2 or DDR3 memory module into a DDR4 slot; otherwise, this motherboard and DIMM may be damaged.*
2. *For dual channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR4 DIMM pairs.*
3. *It is unable to activate Dual Channel Memory Technology with only one or three memory module installed.*
4. *Some DDR4 1GB double-sided DIMMs with 16 chips may not work on this motherboard. It is not recommended to install them on this motherboard.*

English

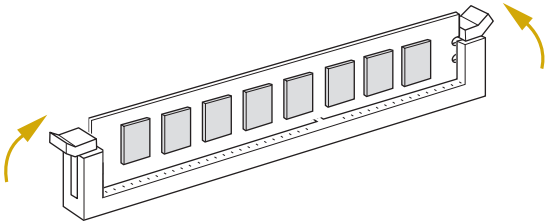
1



2



3



The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Recommended Memory Configurations

A single memory module should be installed in the BLUE socket.

If you install only one CPU (CPU1) on the motherboard, make sure to install DIMMs into DDR4_A, DDR4_B, DDR4_C, or DDR4_D slot(s).

Memory can speed up to 2133 MHz for 1 DIMM per channel. For two DIMMs per channel, memory speed should be 1866MHz.

1 CPU Configuration

	CPU1							
	A1	A2	B1	B2	C1	C2	D1	D2
1 DIMM	#							
2 DIMMS	#		#					
4 DIMMS	#		#		#		#	
8 DIMMS	#	#	#	#	#	#	#	#

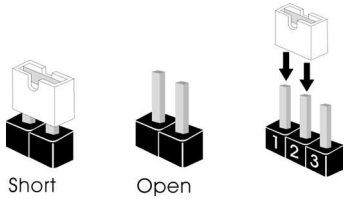
2 CPU Configuration

	CPU1							
	A1	A2	B1	B2	C1	C2	D1	D2
1 DIMM	#							
2 DIMMS	#		#					
4 DIMMS	#		#		#		#	
8 DIMMS	#		#		#		#	
12 DIMMS	#	#	#	#	#	#	#	#
16 DIMMS	#	#	#	#	#	#	#	#

	CPU2							
	E1	E2	F1	F2	G1	G2	H1	H2
1 DIMM								
2 DIMMS								
4 DIMMS								
8 DIMMS	#		#		#		#	
12 DIMMS	#		#		#		#	
16 DIMMS	#	#	#	#	#	#	#	#

2.6 Jumper Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is "Short". If no jumper cap is placed on the pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when a jumper cap is placed on these 2 pins.



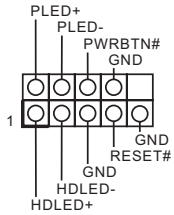
ME Recovery Jumper (3-pin ME_RECOVERY1) (see p.6 or p.9)	1_2 Normal Mode (Default)	2_3 ME Recovery Mode
CPU PECI Mode Jumper (3-pin PECI1) (see p.6 or p.9)	1_2 CPU PECI connect to PCH	2_3 CPU PECI connect to BMC (Default)
PMBUS Mode Jumper (3-pin PMBUS_SEL_DAT1) (see p.6 or p.9) (3-pin PMBUS_SEL_CLK1) (see p.6 or p.9) (3-pin PMBUS_SEL_ALT1) (see p.6 or p.9)	1_2 PMBus connected to BMC (Default)	2_3 PMBus connected to PCH
NCSI Mode Jumper (3-pin NCSI_SEL1) (see p.6 or p.9)	1_2 NCSI is set to onboard LAN1 (Default)	2_3 NCSI is set to Mezzanine Card

Chassis ID0 Jumper (3-pin Chassis ID0) (see p.6 or p.9) Chassis ID1 Jumper (3-pin Chassis ID1) (see p.6 or p.9) Chassis ID2 Jumper (3-pin Chassis ID2) (see p.6 or p.9)	 Board Level SKU (Default)	 For 3U8G system, passive GPGPU
Chassis ID0 Jumper (3-pin Chassis ID0) (see p.6 or p.9) Chassis ID1 Jumper (3-pin Chassis ID1) (see p.6 or p.9) Chassis ID2 Jumper (3-pin Chassis ID2) (see p.6 or p.9)	 For 3U8G system, active GPGPU	 Reserved for system level use
Chassis ID0 Jumper (3-pin Chassis ID0) (see p.6 or p.9) Chassis ID1 Jumper (3-pin Chassis ID1) (see p.6 or p.9) Chassis ID2 Jumper (3-pin Chassis ID2) (see p.6 or p.9)	 Reserved for system level use	 Reserved for system level use

2.7 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard.

System Panel Header
(9-pin PANEL1)
(see p.6 or p.9)



Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

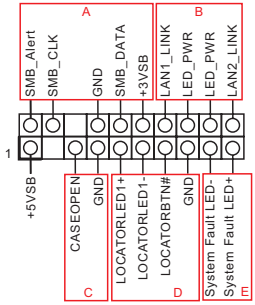
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Auxiliary Panel Header
(18-pin AUX PANEL_1)
(see p.6 or p.9)



This header supports multiple functions on the front panel, including the front panel SMB, internet status indicator and chassis intrusion pin.

A. Front panel SMBus connecting pin (6-1 pin FPSMB)
This header allows you to connect SMBus (System Management Bus) equipment. It can be used for communication between peripheral equipment in the system, which has slower transmission rates, and power management equipment.

B. Internet status indicator (2-pin LAN1_LED, LAN2_LED)
These two 2-pin headers allow you to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.

C. Chassis intrusion pin (2-pin CHASSIS)
This header is provided for host computer chassis with chassis intrusion detection designs. In addition, it must also work with external detection equipment, such as a chassis intrusion detection sensor or a microswitch. When this function is activated, if any chassis component movement occurs, the sensor will immediately detect it and send a signal to this header, and the system will then record this chassis intrusion event. The default setting is set to the CASEOPEN and GND pin; this function is off.

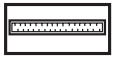
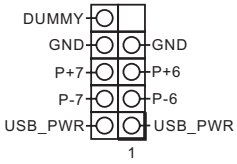
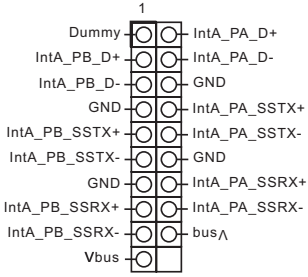
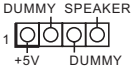
D. Locator LED (4-pin LOCATOR)
This header is for the locator switch and LED on the front panel.

E. System Fault LED (2-pin LOCATOR)
This header is for the Fault LED on the system.

Serial ATA3 Connectors
(SATA_4)
(see p.6 or p.9)
(SATA_5)
(see p.6 or p.9)
(M_SATA_0)
((see p.6 or p.9)
(M_SATA_1)
(see p.6 or p.9)

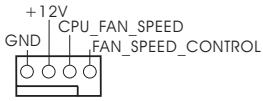
These four SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.

English

mini SAS Connectors (SATA0-3) (see p.6 or p.9) (sSATA0-3) (see p.6 or p.9)		These connectors are used to connect the SATA port on the backplane.
USB 2.0 Header (9-pin USB_3_4) (see p.6 or p.9)		Besides two USB 2.0 ports on the I/O panel, there is one header on this motherboard. Each USB 2.0 header can support two ports.
USB 3.0 Connector (USB3_5) (see p.6 or p.9)		
USB 3.0 Header (19-pin USB3_2_3) (see p.6 or p.9)		Besides two default USB 3.0 ports on the I/O panel, there is one USB 3.0 header on this motherboard. This USB 3.0 header can support two USB 3.0 ports.
Chassis Speaker Header (4-pin SPEAKER1) (see p.6 or p.9)		Please connect the chassis speaker to this header.

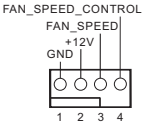
English

CPU Fan Connectors
(4-pin CPU_FAN1)
(see p.6 or p.9)
(4-pin CPU_FAN2)
(see p.6 or p.9, No. 7)



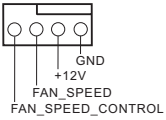
This motherboard provides two 4-Pin CPU fan (Quiet Fan) connectors. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

Front and Rear Fan Connectors
(4-pin FRNT_FAN1)
(see p.6 or p.9, No. 6)
(4-pin FRNT_FAN2)
(see p.6 or p.9)

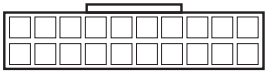


Please connect fan cables to the fan connectors and match the black wire to the ground pin. All fans support Fan Control.

(4-pin REAR_FAN1)
(see p.6 or p.9, No. 3)
(4-pin REAR_FAN2)
(see p.6 or p.9)

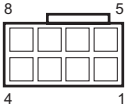


ATX Power Connector
(24-pin ATXPWR1)
(see p.6 or p.9, No. 2)



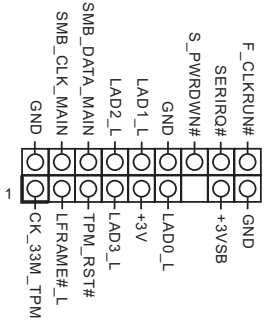
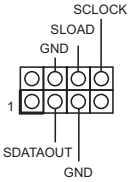
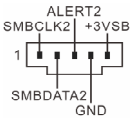
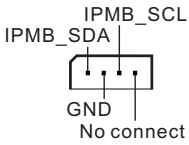
This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

ATX 12V Power Connectors
(8-pin ATX12V2)
(see p.6 or p.9)
(8-pin ATX12V3)
(see p.6 or p.9)

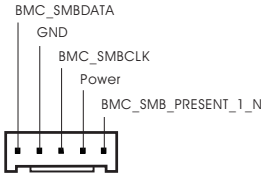
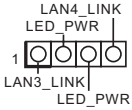
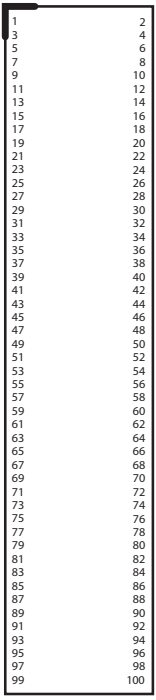


This motherboard provides two 8-pin ATX 12V power connectors.

English

TPM Header (17-pin TPM1) (see p.6 or p.9)		This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.
Serial General Purpose Input/Output Headers (7-pin SATA_SGPIO2) (see p.6 or p.9)		This header supports Serial Link interface for onboard SATA connections.
PSU SMBus (PSU_SMB1) (see p.6 or p.9)		PSU SMBus monitors the status of the power supply, fan and system temperature.
Non Maskable Interrupt Button Header (NMI_BTN1) (see p.6 or p.9)		Please connect a NMI device to this header.
Intelligent Platform Management Bus header (4-pin IPMB_1) (see p.6 or p.9, No. 1)		This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

English

Baseboard Management Controller SMBus Header (5-pin BMC_SMB_1) (see p.6 or p.9)		This header is used for the SM BUS devices.
Front Lan LED Connector (FRONT_LED_LAN34) (see p.6 or p.9)		This 4-pin connector is used for the front LAN status indicator.
PCIE Switch Board Connectors **Only supported for EPC612D-16FM motherboard* (100-pin CON28) (see p.6, No. 11) (100-pin CON30) (see p.6, No. 8)		These four connectors are used for PCIE Switch Board connections.

English

(120-pin CON29)
(see p.6, No. 13)
(120-pin CON31)
(see p.6, No. 10)

1	2
3	4
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9	10
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113	114
115	116
117	118
119	120

1. *CON31: SAMTEC/ERF8-050-01-L-D-RA-TR mates with SAMTEC/ERM8-050(vertical), SAMTEC/ERM8-050-01-L-D-RA(R/A)*
2. *CON32: SAMTEC/ERF8-060-01-L-D-RA-TR mates with SAMTEC/ERM8-060(vertical), SAMTEC/ERM8-060-01-L-D-RA(R/A)*
3. *CON28: SAMTEC/ERF8-050-01-L-D-RA-TR mates with SAMTEC/ERM8-050(vertical), SAMTEC/ERM8-050-01-L-D-RA(R/A)*
4. *CON29: SAMTEC/ERF8-060-01-L-D-RA-TR mates with SAMTEC/ERM8-060(vertical), SAMTEC/ERM8-060-01-L-D-RA(R/A)*

100-pin Con28

Pin	Defeinition	Pin	Defeinition
1	CPU1_PE3D_TX_C_DP15	2	CPU1_PE3D_RX_DP15
3	CPU1_PE3D_TX_C_DN15	4	CPU1_PE3D_RX_DN15
5	GND	6	GND
7	CPU1_PE3D_TX_C_DP14	8	CPU1_PE3D_RX_DP14
9	CPU1_PE3D_TX_C_DN14	10	CPU1_PE3D_RX_DN14
11	GND	12	GND
13	CPU1_PE3D_TX_C_DP13	14	CPU1_PE3D_RX_DP13
15	CPU1_PE3D_TX_C_DN13	16	CPU1_PE3D_RX_DN13
17	GND	18	GND
19	CPU1_PE3D_TX_C_DP12	20	CPU1_PE3D_RX_DP12
21	CPU1_PE3D_TX_C_DN12	22	CPU1_PE3D_RX_DN12
23	GND	24	GND
25	CPU1_PE3C_TX_C_DP11	26	CPU1_PE3C_RX_DP11
27	CPU1_PE3C_TX_C_DN11	28	CPU1_PE3C_RX_DN11
29	GND	30	GND
31	CPU1_PE3C_TX_C_DP10	32	CPU1_PE3C_RX_DP10
33	CPU1_PE3C_TX_C_DN10	34	CPU1_PE3C_RX_DN10
35	GND	36	GND
37	CPU1_PE3C_TX_C_DP9	38	CPU1_PE3C_RX_DP9
39	CPU1_PE3C_TX_C_DN9	40	CPU1_PE3C_RX_DN9
41	GND	42	GND
43	CPU1_PE3C_TX_C_DP8	44	CPU1_PE3C_RX_DP8
45	CPU1_PE3C_TX_C_DN8	46	CPU1_PE3C_RX_DN8
47	GND	48	GND
49	CPU1_PE3B_TX_C_DP7	50	CPU1_PE3B_RX_DP7
51	CPU1_PE3B_TX_C_DN7	52	CPU1_PE3B_RX_DN7
53	GND	54	GND
55	CPU1_PE3B_TX_C_DP6	56	CPU1_PE3B_RX_DP6
57	CPU1_PE3B_TX_C_DN6	58	CPU1_PE3B_RX_DN6
59	GND	60	GND
61	CPU1_PE3B_TX_C_DP5	62	CPU1_PE3B_RX_DP5
63	CPU1_PE3B_TX_C_DN5	64	CPU1_PE3B_RX_DN5
65	GND	66	GND
67	CPU1_PE3B_TX_C_DP4	68	CPU1_PE3B_RX_DP4
69	CPU1_PE3B_TX_C_DN4	70	CPU1_PE3B_RX_DN4
71	GND	72	GND
73	CPU1_PE3A_TX_C_DP3	74	CPU1_PE3A_RX_DP3
75	CPU1_PE3A_TX_C_DN3	76	CPU1_PE3A_RX_DN3
77	GND	78	GND
79	CPU1_PE3A_TX_C_DP2	80	CPU1_PE3A_RX_DP2
81	CPU1_PE3A_TX_C_DN2	82	CPU1_PE3A_RX_DN2

Pin	Defeinition	Pin	Defeinition
83	GND	84	GND
85	CPU1_PE3A_TX_C_DP1	86	CPU1_PE3A_RX_DP1
87	CPU1_PE3A_TX_C_DN1	88	CPU1_PE3A_RX_DN1
89	GND	90	GND
91	CPU1_PE3A_TX_C_DP0	92	CPU1_PE3A_RX_DP0
93	CPU1_PE3A_TX_C_DN0	94	CPU1_PE3A_RX_DN0
95	GND	96	GND
97	CPU1_PE_HP_SCL	98	CPU_VIO
99	CPU1_PE_HP_SDA	100	CPU_VIO

120-pin Con29

Pin	Defeinition	Pin	Defeinition
1	PWM_FRONT2_SWB	2	GND
3	PWM_FRONT1_SWB	4	CLK_100M_PLX_CLK1_R_DP
5	TACH_SWB_FAN1	6	CLK_100M_PLX_CLK1_R_DN
7	TACH_SWB_FAN3	8	GND
9	TACH_SWB_FAN5	10	CLK_100M_DB1900_CLK_R_DP
11	TACH_SWB_FAN6	12	CLK_100M_DB1900_CLK_R_DN
13	TACH_SWB_FAN8	14	GND
15	PWM_CPU1_SWB	16	CLK_100M_PLX_CLK3_R_DP
17	SWB_PRESENT_N	18	CLK_100M_PLX_CLK3_R_DN
19	GND	20	GND
21	CLK_100M_PLX_CLK2_R_DP	22	CLK_100M_PLX_CLK4_R_DP
23	CLK_100M_PLX_CLK2_R_DN	24	CLK_100M_PLX_CLK4_R_DN
25	GND	26	GND
27	CPU1_PE2D_TX_C_DP15	28	CPU1_PE2D_RX_DP15
29	CPU1_PE2D_TX_C_DN15	30	CPU1_PE2D_RX_DN15
31	GND	32	GND
33	CPU1_PE2D_TX_C_DP14	34	CPU1_PE2D_RX_DP14
35	CPU1_PE2D_TX_C_DN14	36	CPU1_PE2D_RX_DN14
37	GND	38	GND
39	CPU1_PE2D_TX_C_DP13	40	CPU1_PE2D_RX_DP13
41	CPU1_PE2D_TX_C_DN13	42	CPU1_PE2D_RX_DN13
43	GND	44	GND
45	CPU1_PE2D_TX_C_DP12	46	CPU1_PE2D_RX_DP12
47	CPU1_PE2D_TX_C_DN12	48	CPU1_PE2D_RX_DN12
49	GND	50	GND
51	CPU1_PE2C_TX_C_DP11	52	CPU1_PE2C_RX_DP11
53	CPU1_PE2C_TX_C_DN11	54	CPU1_PE2C_RX_DN11
55	GND	56	GND
57	CPU1_PE2C_TX_C_DP10	58	CPU1_PE2C_RX_DP10
59	CPU1_PE2C_TX_C_DN10	60	CPU1_PE2C_RX_DN10
61	GND	62	GND
63	CPU1_PE2C_TX_C_DP9	64	CPU1_PE2C_RX_DP9
65	CPU1_PE2C_TX_C_DN9	66	CPU1_PE2C_RX_DN9
67	GND	68	GND
69	CPU1_PE2C_TX_C_DP8	70	CPU1_PE2C_RX_DP8
71	CPU1_PE2C_TX_C_DN8	72	CPU1_PE2C_RX_DN8
73	GND	74	GND
75	CPU1_PE2B_TX_C_DP7	76	CPU1_PE2B_RX_DP7
77	CPU1_PE2B_TX_C_DN7	78	CPU1_PE2B_RX_DN7
79	GND	80	GND
81	CPU1_PE2B_TX_C_DP6	82	CPU1_PE2B_RX_DP6

Pin	Defeinition	Pin	Defeinition
83	CPU1_PE2B_TX_C_DN6	84	CPU1_PE2B_RX_DN6
85	GND	86	GND
87	CPU1_PE2B_TX_C_DP5	88	CPU1_PE2B_RX_DP5
89	CPU1_PE2B_TX_C_DN5	90	CPU1_PE2B_RX_DN5
91	GND	92	GND
93	CPU1_PE2B_TX_C_DP4	94	CPU1_PE2B_RX_DP4
95	CPU1_PE2B_TX_C_DN4	96	CPU1_PE2B_RX_DN4
97	GND	98	GND
99	CPU1_PE2A_TX_C_DP3	100	CPU1_PE2A_RX_DP3
101	CPU1_PE2A_TX_C_DN3	102	CPU1_PE2A_RX_DN3
103	GND	104	GND
105	CPU1_PE2A_TX_C_DP2	106	CPU1_PE2A_RX_DP2
107	CPU1_PE2A_TX_C_DN2	108	CPU1_PE2A_RX_DN2
109	GND	110	GND
111	CPU1_PE2A_TX_C_DP1	112	CPU1_PE2A_RX_DP1
113	CPU1_PE2A_TX_C_DN1	114	CPU1_PE2A_RX_DN1
115	GND	116	GND
117	CPU1_PE2A_TX_C_DP0	118	CPU1_PE2A_RX_DP0
119	CPU1_PE2A_TX_C_DN0	120	CPU1_PE2A_RX_DN0

100-pin Con30

Pin	Defeinition	Pin	Defeinition
1	CPU2_PE3D_TX_C_DP15	2	CPU2_PE3D_RX_DP15
3	CPU2_PE3D_TX_C_DN15	4	CPU2_PE3D_RX_DN15
5	GND	6	GND
7	CPU2_PE3D_TX_C_DP14	8	CPU2_PE3D_RX_DP14
9	CPU2_PE3D_TX_C_DN14	10	CPU2_PE3D_RX_DN14
11	GND	12	GND
13	CPU2_PE3D_TX_C_DP13	14	CPU2_PE3D_RX_DP13
15	CPU2_PE3D_TX_C_DN13	16	CPU2_PE3D_RX_DN13
17	GND	18	GND
19	CPU2_PE3D_TX_C_DP12	20	CPU2_PE3D_RX_DP12
21	CPU2_PE3D_TX_C_DN12	22	CPU2_PE3D_RX_DN12
23	GND	24	GND
25	CPU2_PE3C_TX_C_DP11	26	CPU2_PE3C_RX_DP11
27	CPU2_PE3C_TX_C_DN11	28	CPU2_PE3C_RX_DN11
29	GND	30	GND
31	CPU2_PE3C_TX_C_DP10	32	CPU2_PE3C_RX_DP10
33	CPU2_PE3C_TX_C_DN10	34	CPU2_PE3C_RX_DN10
35	GND	36	GND
37	CPU2_PE3C_TX_C_DP9	38	CPU2_PE3C_RX_DP9
39	CPU2_PE3C_TX_C_DN9	40	CPU2_PE3C_RX_DN9
41	GND	42	GND
43	CPU2_PE3C_TX_C_DP8	44	CPU2_PE3C_RX_DP8
45	CPU2_PE3C_TX_C_DN8	46	CPU2_PE3C_RX_DN8
47	GND	48	GND
49	CPU2_PE3B_TX_C_DP7	50	CPU2_PE3B_RX_DP7
51	CPU2_PE3B_TX_C_DN7	52	CPU2_PE3B_RX_DN7
53	GND	54	GND
55	CPU2_PE3B_TX_C_DP6	56	CPU2_PE3B_RX_DP6
57	CPU2_PE3B_TX_C_DN6	58	CPU2_PE3B_RX_DN6
59	GND	60	GND
61	CPU2_PE3B_TX_C_DP5	62	CPU2_PE3B_RX_DP5
63	CPU2_PE3B_TX_C_DN5	64	CPU2_PE3B_RX_DN5
65	GND	66	GND
67	CPU2_PE3B_TX_C_DP4	68	CPU2_PE3B_RX_DP4
69	CPU2_PE3B_TX_C_DN4	70	CPU2_PE3B_RX_DN4
71	GND	72	GND
73	CPU2_PE3A_TX_C_DP3	74	CPU2_PE3A_RX_DP3
75	CPU2_PE3A_TX_C_DN3	76	CPU2_PE3A_RX_DN3
77	GND	78	GND
79	CPU2_PE3A_TX_C_DP2	80	CPU2_PE3A_RX_DP2
81	CPU2_PE3A_TX_C_DN2	82	CPU2_PE3A_RX_DN2

Pin	Defeinition	Pin	Defeinition
83	GND	84	GND
85	CPU2_PE3A_TX_C_DP1	86	CPU2_PE3A_RX_DP1
87	CPU2_PE3A_TX_C_DN1	88	CPU2_PE3A_RX_DN1
89	GND	90	GND
91	CPU2_PE3A_TX_C_DP0	92	CPU2_PE3A_RX_DP0
93	CPU2_PE3A_TX_C_DN0	94	CPU2_PE3A_RX_DN0
95	GND	96	GND
97	CPU2_PE_HP_SCL	98	TACH_SWB_FAN2
99	CPU2_PE_HP_SDA	100	PWM_CPU2_SWB

120-pin Con31

Pin	Defeinition	Pin	Defeinition
1	TPC20t T29	2	T27 TPC20t
3	CPU2_SKTOCC#	4	T28 TPC20t
5	TACH_SWB_FAN4	6	BMC_ALERT3
7	TACH_SWB_FAN7	8	BMC_SMB_PMB_CLK
9	GND	10	BMC_SMB_PMB_DATA
11	PCIE_RST#	12	GND
13	WAKE#	14	SMB_CLK_PCI
15	PWROK_PS	16	SMB_DATA_PCI
17	SWB_PWROK	18	GND
19	GND	20	BMC_ALERT1
21	SWB_ID1	22	BMC_SMBCLK1
23	SWB_ID2	24	BMC_SMBDATA1
25	GND	26	GND
27	CPU2_PE2D_TX_C_DP15	28	CPU2_PE2D_RX_DP15
29	CPU2_PE2D_TX_C_DN15	30	CPU2_PE2D_RX_DN15
31	GND	32	GND
33	CPU2_PE2D_TX_C_DP14	34	CPU2_PE2D_RX_DP14
35	CPU2_PE2D_TX_C_DN14	36	CPU2_PE2D_RX_DN14
37	GND	38	GND
39	CPU2_PE2D_TX_C_DP13	40	CPU2_PE2D_RX_DP13
41	CPU2_PE2D_TX_C_DN13	42	CPU2_PE2D_RX_DN13
43	GND	44	GND
45	CPU2_PE2D_TX_C_DP12	46	CPU2_PE2D_RX_DP12
47	CPU2_PE2D_TX_C_DN12	48	CPU2_PE2D_RX_DN12
49	GND	50	GND
51	CPU2_PE2C_TX_C_DP11	52	CPU2_PE2C_RX_DP11
53	CPU2_PE2C_TX_C_DN11	54	CPU2_PE2C_RX_DN11
55	GND	56	GND
57	CPU2_PE2C_TX_C_DP10	58	CPU2_PE2C_RX_DP10
59	CPU2_PE2C_TX_C_DN10	60	CPU2_PE2C_RX_DN10
61	GND	62	GND
63	CPU2_PE2C_TX_C_DP9	64	CPU2_PE2C_RX_DP9
65	CPU2_PE2C_TX_C_DN9	66	CPU2_PE2C_RX_DN9
67	GND	68	GND
69	CPU2_PE2C_TX_C_DP8	70	CPU2_PE2C_RX_DP8
71	CPU2_PE2C_TX_C_DN8	72	CPU2_PE2C_RX_DN8
73	GND	74	GND
75	CPU2_PE2B_TX_C_DP7	76	CPU2_PE2B_RX_DP7
77	CPU2_PE2B_TX_C_DN7	78	CPU2_PE2B_RX_DN7
79	GND	80	GND
81	CPU2_PE2B_TX_C_DP6	82	CPU2_PE2B_RX_DP6

Pin	Defeinition	Pin	Defeinition
83	CPU2_PE2B_TX_C_DN6	84	CPU2_PE2B_RX_DN6
85	GND	86	GND
87	CPU2_PE2B_TX_C_DP5	88	CPU2_PE2B_RX_DP5
89	CPU2_PE2B_TX_C_DN5	90	CPU2_PE2B_RX_DN5
91	GND	92	GND
93	CPU2_PE2B_TX_C_DP4	94	CPU2_PE2B_RX_DP4
95	CPU2_PE2B_TX_C_DN4	96	CPU2_PE2B_RX_DN4
97	GND	98	GND
99	CPU2_PE2A_TX_C_DP3	100	CPU2_PE2A_RX_DP3
101	CPU2_PE2A_TX_C_DN3	102	CPU2_PE2A_RX_DN3
103	GND	104	GND
105	CPU2_PE2A_TX_C_DP2	106	CPU2_PE2A_RX_DP2
107	CPU2_PE2A_TX_C_DN2	108	CPU2_PE2A_RX_DN2
109	GND	110	GND
111	CPU2_PE2A_TX_C_DP1	112	CPU2_PE2A_RX_DP1
113	CPU2_PE2A_TX_C_DN1	114	CPU2_PE2A_RX_DN1
115	GND	116	GND
117	CPU2_PE2A_TX_C_DP0	118	CPU2_PE2A_RX_DP0
119	CPU2_PE2A_TX_C_DN0	120	CPU2_PE2A_RX_DN0

2.8 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

2.9 Dual LAN and Teaming Operation Guide

Dual LAN with Teaming enabled on this motherboard allows two single connections to act as one single connection for twice the transmission bandwidth, making data transmission more effective and improving the quality of transmission of distant images. Fault tolerance on the dual LAN network prevents network downtime by transferring the workload from a failed port to a working port.

The speed of transmission is subject to the actual network environment or status even with Teaming enabled.

Before setting up Teaming, please make sure whether your Switch (or Router) supports Teaming (IEEE 802.3ad Link Aggregation). You can specify a preferred adapter in Intel PROSet. Under normal conditions, the Primary adapter handles all non-TCP/IP traffic. The Secondary adapter will receive fallback traffic if the primary fails. If the Preferred Primary adapter fails, but is later restored to an active status, control is automatically switched back to the Preferred Primary adapter.

Step 1

From **Device Manager**, open the properties of a team.

Step 2

Click the **Settings** tab.

Step 3

Click the **Modify Team** button.

Step 4

Select the adapter you want to be the primary adapter and click the **Set Primary** button.

If you do not specify a preferred primary adapter, the software will choose an adapter of the highest capability (model and speed) to act as the default primary. If a failover occurs, another adapter becomes the primary. The adapter will, however, rejoin the team as a non-primary.

Chapter 3 UEFI Setup Utility

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY; otherwise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctrl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Item	Description
Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
IntelRCSetup	For Intel CPU and chipset settings
Server Mgmt	To manage the server
Security	To set up the security features
Boot	To set up the default system device to locate and load the Operating System
Event Logs	For event log configuration
Exit	To exit the current screen or the UEFI SETUP UTILITY

Use <←> key or <→> key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

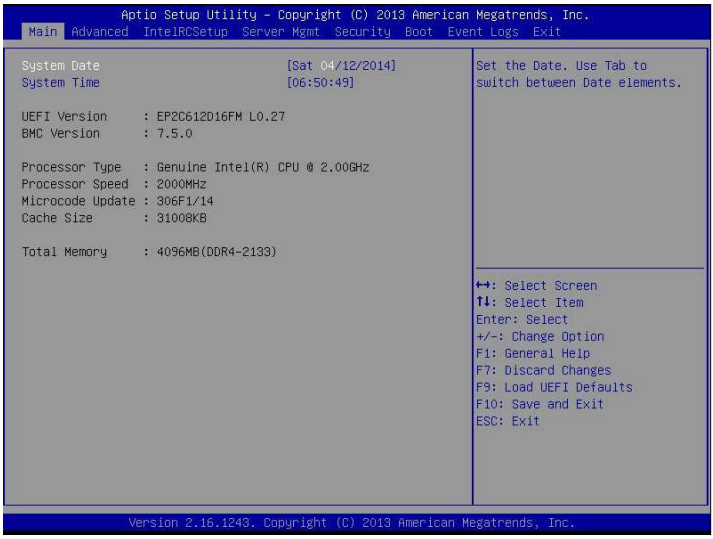
3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Tab>	Switch to next function
<Enter>	To bring up the selected screen
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the UEFI SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the UEFI SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

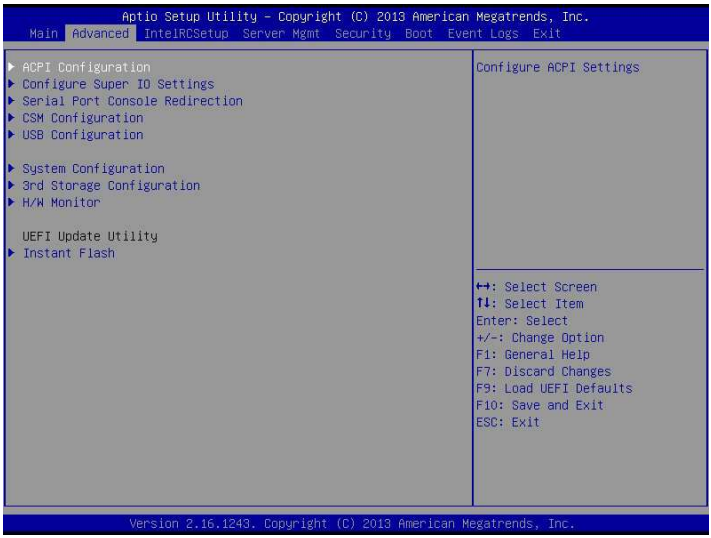
3.2 Main Screen

Once you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview. The Main screen provides system overview information and allows you to set the system time and date.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IntelRCSetup Server Mgmt Security Boot Event Logs Exit
System Date [Sat 04/12/2014]
System Time [06:50:49]
UEFI Version : EP2C612D16FM L0.27
BMC Version : 7.5.0
Processor Type : Genuine Intel(R) CPU @ 2.00GHz
Processor Speed : 2000MHz
Microcode Update : 306F1/14
Cache Size : 31008KB
Total Memory : 4096MB(DDR4-2133)
Set the Date. Use Tab to switch between Date elements.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

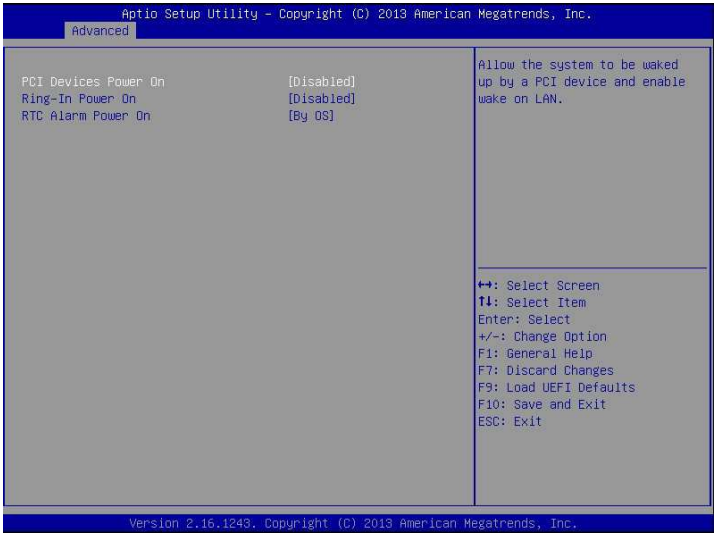
3.3 Advanced Screen

In this section, you may set the configurations for the following items: ACPI Configuration, Configure Super IO Settings, Serial Port Console Redirection, CSM Configuration, USB Configuration, System Configuration, 3rd Storage Configuration, H/W Monitor and Instant Flash.



Setting wrong values in this section may cause the system to malfunction.

3.3.1 ACPI Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
PCI Devices Power On [Disabled]
Ring-In Power On [Disabled]
RTC Alarm Power On [By OS]
Allow the system to be waked up by a PCI device and enable wake on LAN.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

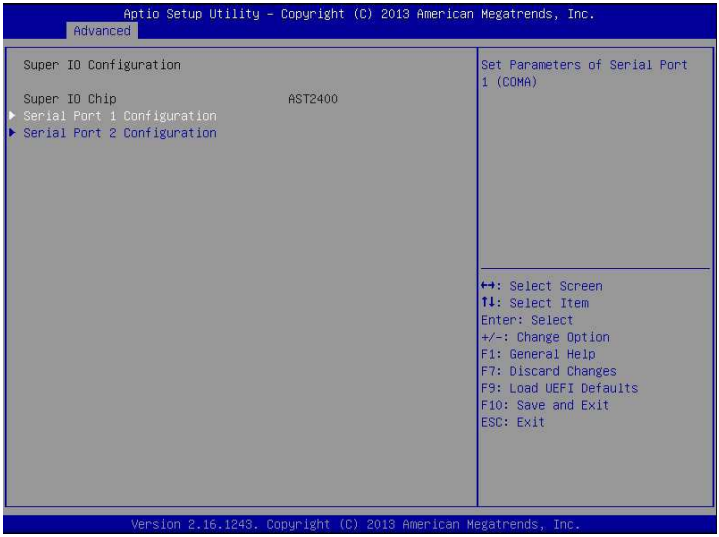
Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

3.3.2 Configure Super IO Settings


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Super IO Configuration
Super IO Chip AST2400
Serial Port 1 Configuration
Serial Port 2 Configuration
Set Parameters of Serial Port 1 (COMA)
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Serial Port 1 Configuration

Use this item to configure the onboard serial port 1.

Select and enter the "Serial Port 1 Configuration" and you will see the followings:

Serial Port
Use this item to enable or disable the onboard serial port.

Change Settings
Use this item to select an optimal setting for Super IO device.

Serial Port 2 Configuration

Use this item to configure the onboard serial port 2.

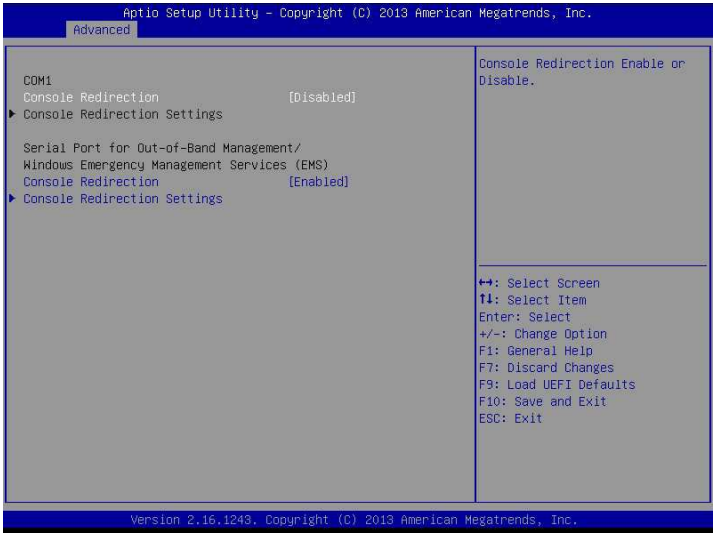
Select and enter the "Serial Port 2 Configuration" and you will see the followings:

Serial Port
Use this item to enable or disable the onboard serial port.

Serial Port Mode
Use this item to select Serial Over LAN or COM mode.

Change Settings
Use this item to select an optimal setting for Super IO device.

3.3.3 Serial Port Console Redirection



Console Redirection

Use this option to enable or disable Console Redirection. If this item is set to Enabled, you can select a COM Port to be used for Console Redirection.

Console Redirection Settings

Use this option to configure Console Redirection Settings, and specify how your computer and the host computer to which you are connected exchange information.

Out-of-Band-Mgmt (Management) Port

Use this item to select the port to be used for out-of-band management. The options include [COM1] and [SOL].

Terminal Type

Use this item to select the preferred terminal emulation type for out-of-band management. It is recommended to select [VT-UTF8].

Option	Description
VT100	ASCII character set
VT100+	Extended VT100 that supports color and function keys
VT-UTF8	UTF8 encoding is used to map Unicode chars onto 1 or more bytes
ANSI	Extended ASCII character set

Bits Per Second

Use this item to select the serial port transmission speed. The speed used in the host computer and the client computer must be the same. Long or noisy lines may require lower transmission speed. The options include [9600], [19200], [57600] and [115200].

Flow Control

Use this item to set the flow control to prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None], [Hardware RTS/CTS], and [Software Xon/Xoff].

Data Bits

Use this item to set the data transmission size. The options include [7] and [8] (Bits).

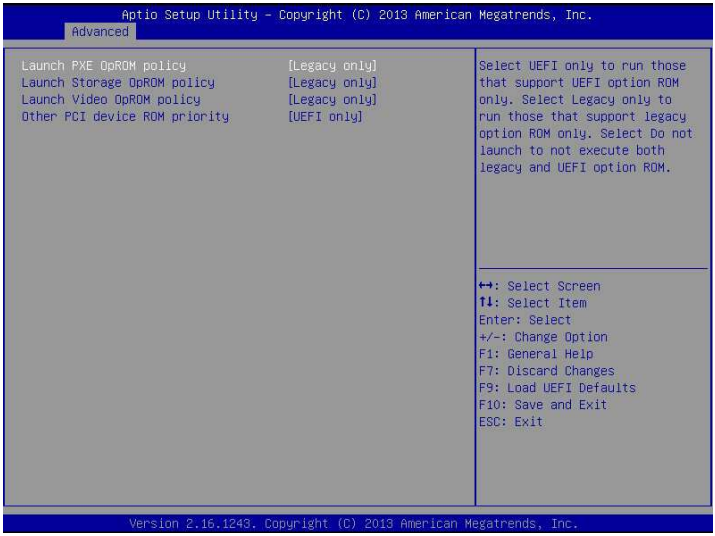
Parity

Use this item to select the parity bit. The options include [None], [Even], [Odd], [Mark] and [Space].

Stop Bits

The item indicates the end of a serial data packet. The standard setting is [1] Stop Bit. Select [2] Stop Bits for slower devices.

3.3.4 CSM Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Launch PXE OpROM policy [Legacy only]
Launch Storage OpROM policy [Legacy only]
Launch Video OpROM policy [Legacy only]
Other PCI device ROM priority [UEFI only]
Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Launch PXE OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

Launch Storage OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

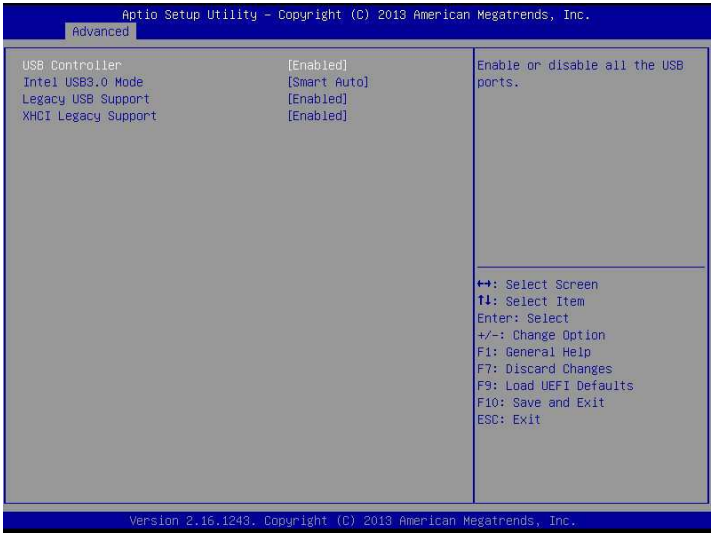
Launch Video OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

Other PCI Device ROM Priority

For PCI devices other than network, Mass storage or Video defines which OpROM to launch.

3.3.5 USB Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
USB Controller [Enabled]
Intel USB3.0 Mode [Smart Auto]
Legacy USB Support [Enabled]
XHCI Legacy Support [Enabled]
Enable or disable all the USB ports.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

USB Controller

Enable or disable all the USB ports.

Intel USB3.0 Mode

Enable or disable all the USB 3.0 ports.

Legacy USB Support

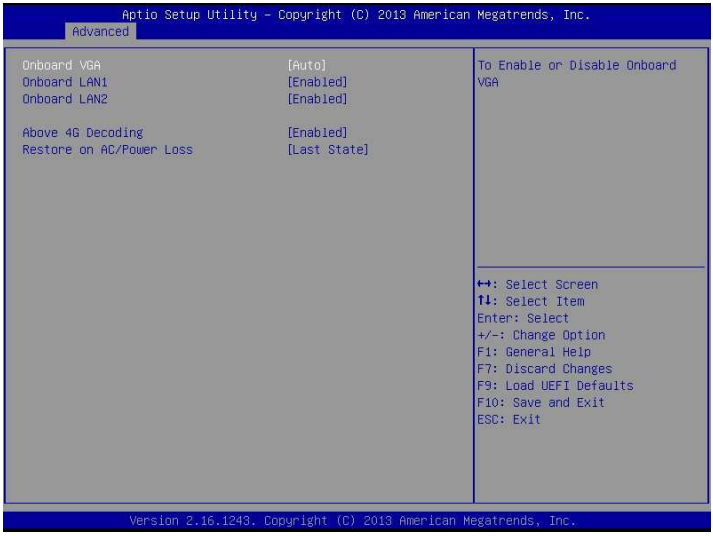
Use this option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to below descriptions for the details of these four options:

Option	Description
Enabled	Enables support for legacy USB.
Disabled	USB devices are not allowed to use under legacy OS and UEFI setup when [Disabled] is selected. If you have USB compatibility issues, it is recommended to select [Disabled] to enter OS.
Auto	Enables legacy support if USB devices are connected.
UEFI Setup Only	SB devices are allowed to use only under UEFI setup and Windows / Linux OS.

XHCI Legacy Support

Enable or disable XHCI Controller Legacy support.

3.3.6 System Configuration



Onboard VGA

Use this to enable or disable the Onboard VGA function. The default value is [Auto].

Onboard LAN1

This allows you to enable or disable the Onboard LAN 1 feature.

Onboard LAN2

This allows you to enable or disable the Onboard LAN 2 feature.

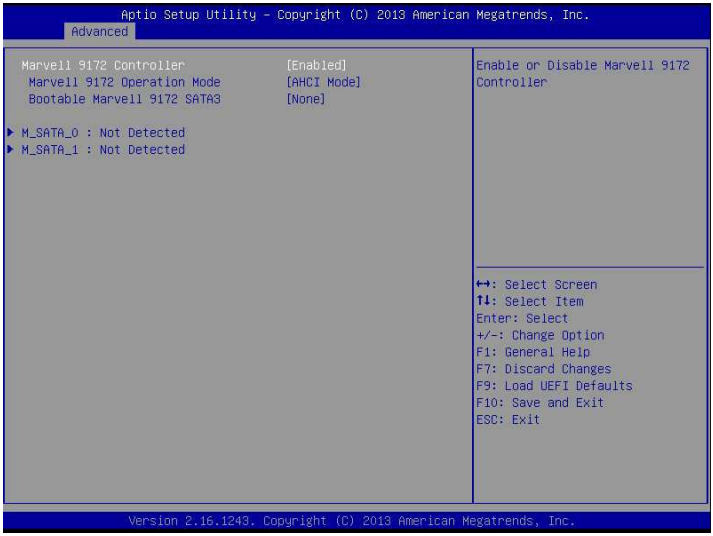
Above 4G Decoding

Enable or disable 64bit capable Devices to be decoded in Above 4G Address Space (only if the system supports 64 bit PCI decoding).

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

3.3.7 3rd Storage Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Marvell 9172 Controller [Enabled]
Marvell 9172 Operation Mode [AHCI Mode]
Bootable Marvell 9172 SATA3 [None]
M_SATA_0 : Not Detected
M_SATA_1 : Not Detected
Enable or Disable Marvell 9172 Controller
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Marvell 9172 Controller

Enable or disable Marvell 9172 Controller.

Marvell 9172 Operation Mode

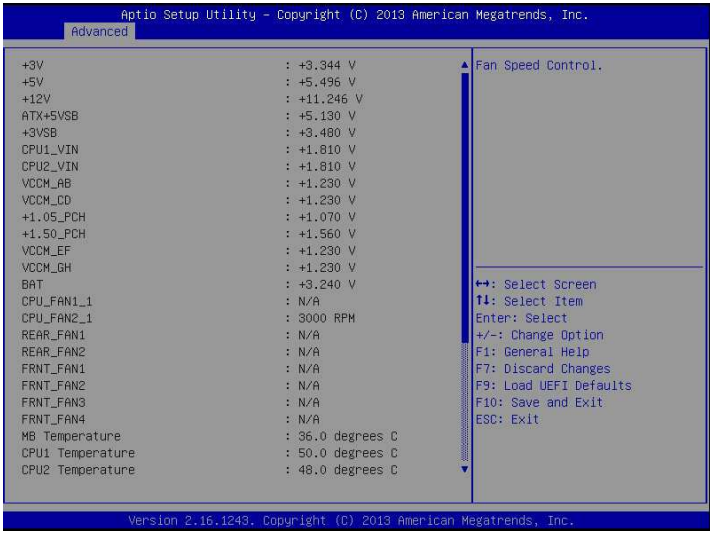
This item is for eSATA ports. Use this to select Marvell SATA operation mode. Configuration options: [Disabled], [IDE Mode], [AHCI Mode], [RAID Mode] and [Disabled]. The default value is [AHCI Mode].

Bootable Marvell 9172 SATA3

We recommend to use Intel SATA ports (Port 0~5) for your bootable devices. This will minimize your boot time and get the best performance. If you still want to boot from Marvell SATA3 controller, please set this item to Yes.

3.3.8 H/W Monitor

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.



CPU_FAN 1

This allows you to set the CPU fan 1's speed. The default value is [Smart Fan].

CPU_FAN 2

This allows you to set the CPU fan 2's speed. The default value is [Smart Fan].

REAR_FAN 1

This allows you to set the rear fan 1's speed. The default value is [Smart Fan].

FRNT_FAN 1

This allows you to set the front fan 1's speed. The default value is [Smart Fan].

FRNT_FAN 2

This allows you to set the front fan 2's speed. The default value is [Smart Fan].

Smart Fan Control

This allows you to set the Smart fan's level speed.

Smart Fan Duty Control

Smart Fan Duty x (x means 1 to 11 stage)

This allows you to set duty cycle for each stage.

Smart Fan Temp Control

Smart Fan Temp x (x means 1 to 11 stage)

This allows you to set temperature for each stage.

Watch Dog Timer

This allows you to enable or disable the Watch Dog Timer. The default value is [Disabled].

Case Open Feature

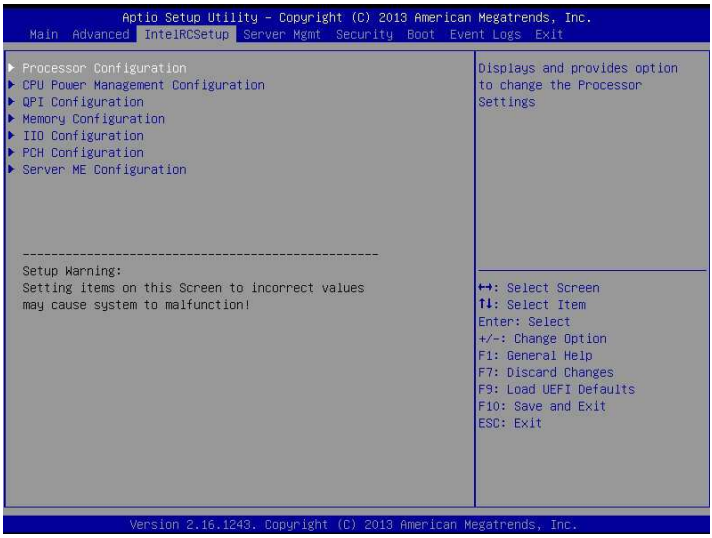
This allows you to enable or disable the Case Open Feature. The default value is [Enabled].

3.3.9 Instant Flash

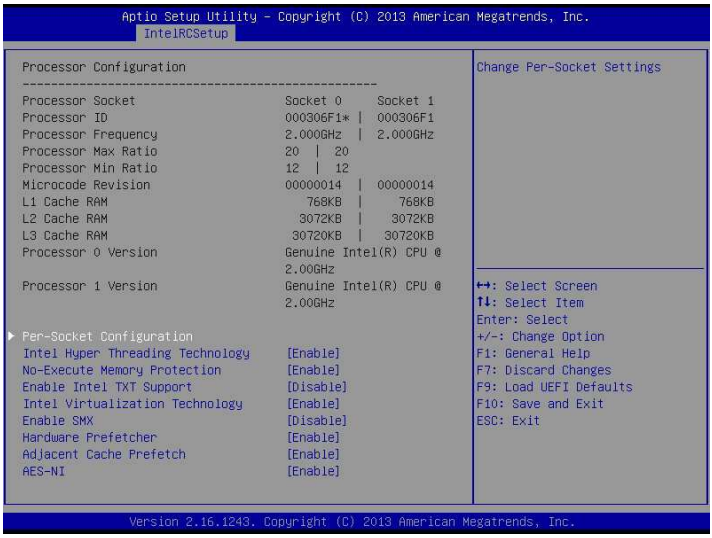
Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just save the new UEFI file to your USB flash drive, floppy disk or hard drive and launch this tool, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after the UEFI update process is completed.

3.4 IntelRCSetup

In this section, you may set the configurations for the following items: Processor Configuration, CPU Power Management Configuration, QPI Configuration, Memory Configuration, IIO Configuration, PCH Configuration and Server ME Configuration.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IntelRCSetup Server Mgmt Security Boot Event Logs Exit
Processor Configuration
CPU Power Management Configuration
QPI Configuration
Memory Configuration
IIO Configuration
PCH Configuration
Server ME Configuration
Setup Warning:
Setting items on this Screen to incorrect values may cause system to malfunction!
Displays and provides option to change the Processor Settings
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

3.4.1 Processor Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
IntelRCSetup
Processor Configuration
Processor Socket Socket 0 Socket 1
Processor ID 000306F1* | 000306F1
Processor Frequency 2.000GHz | 2.000GHz
Processor Max Ratio 20 | 20
Processor Min Ratio 12 | 12
Microcode Revision 00000014 | 00000014
L1 Cache RAM 768KB | 768KB
L2 Cache RAM 3072KB | 3072KB
L3 Cache RAM 30720KB | 30720KB
Processor 0 Version Genuine Intel(R) CPU @ 2.00GHz
Processor 1 Version Genuine Intel(R) CPU @ 2.00GHz
Per-Socket Configuration
Intel Hyper Threading Technology [Enable]
No-Execute Memory Protection [Enable]
Enable Intel TXT Support [Disable]
Intel Virtualization Technology [Enable]
Enable SMX [Disable]
Hardware Prefetcher [Enable]
Adjacent Cache Prefetch [Enable]
AES-NI [Enable]
Change Per-Socket Settings
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Per-Socket Configuration

Change Per-Socket Settings.

CPU Socket 0 Configuration

Active Processor Cores

Enter the number of cores to be enabled. 0 means all cores. 12 cores are available.

CPU Socket 1 Configuration

Active Processor Cores

Enter the number of cores to be enabled. 0 means all cores. 12 cores are available.

Intel Hyper Threading Technology

Intel Hyper Threading Technology allows multiple threads to run on each core, so that the overall performance on threaded software is improved.

No-Execute Memory Protection

Processors with No-Execution Memory Protection Technology may prevent certain classes of malicious buffer overflow attacks.

Enable Intel TXT Support

Enable Intel Trusted Execution Technology configuration. Please disable "EX DFX

Features" when TXT is enabled.

Intel Virtualization Technology

Intel Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions, so that one computer system can function as multiple virtual systems.

Enable SMX

Use this item to enable Safer Mode Extensions.

Hardware Prefetcher

Automatically prefetch the subsequent cache line while retrieving the currently requested cache line. Enable for better performance.

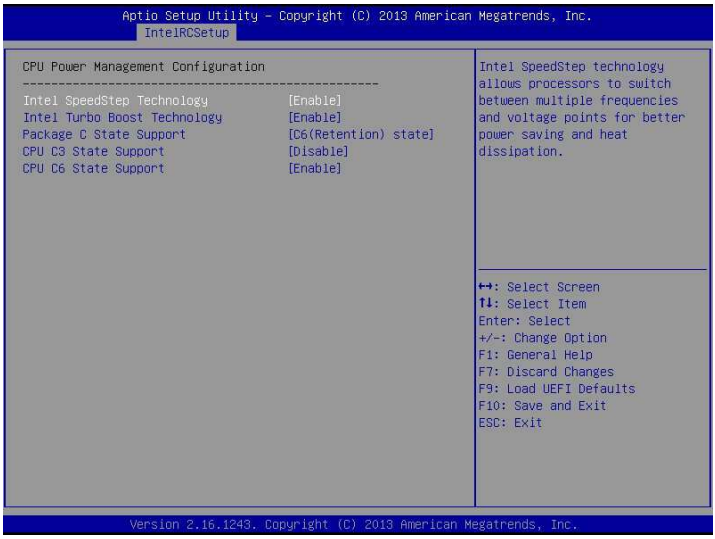
Adjacent Cache Prefetch

Automatically prefetch the subsequent cache line while retrieving the currently requested cache line. Enable for better performance.

AES-NI

Use this item to enable or disable AES-NI support.

3.4.2 CPU Power Management Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
IntelRCSetup
CPU Power Management Configuration
Intel SpeedStep Technology [Enable]
Intel Turbo Boost Technology [Enable]
Package C State Support [C6(Retention) state]
CPU C3 State Support [Disable]
CPU C6 State Support [Enable]
Intel SpeedStep technology allows processors to switch between multiple frequencies and voltage points for better power saving and heat dissipation.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Intel SpeedStep Technology

Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® Vista™ / 7 / 8 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel(R) SpeedStep technology.

Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur.

Intel Turbo Boost Technology

Use this item to enable or disable Intel Turbo Boost Technology. Turbo Boost allows processor cores to run faster than marked frequency in specific conditions. The default value is [Enabled].

Package C State Support

Enable CPU, PCIe, Memory, Graphics C State Support for power saving.

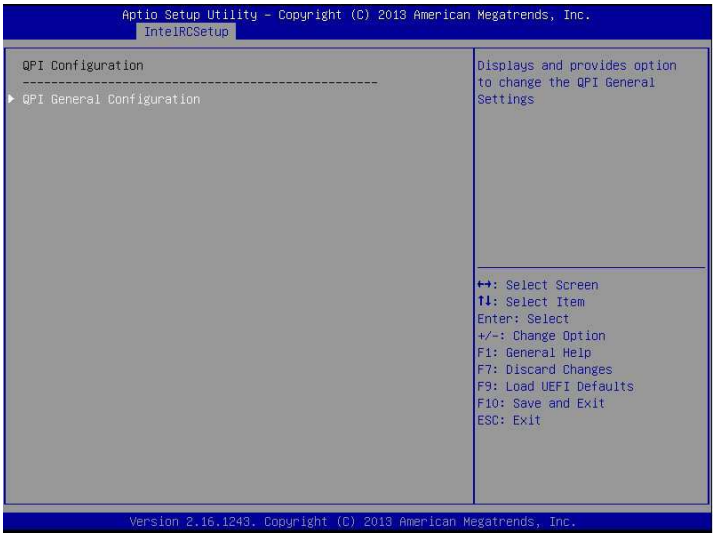
CPU C3 State Support

Enable C3 sleep state for lower power consumption.

CPU C6 State Support

Enable C6 deep sleep state for lower power consumption.

3.4.3 QPI Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
IntelRCSetup
QPI Configuration
QPI General Configuration
Displays and provides option to change the QPI General Settings
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

QPI General Configuration

Displays and provides option to change the QPI General Settings.

QPI Status

QPI Status Help

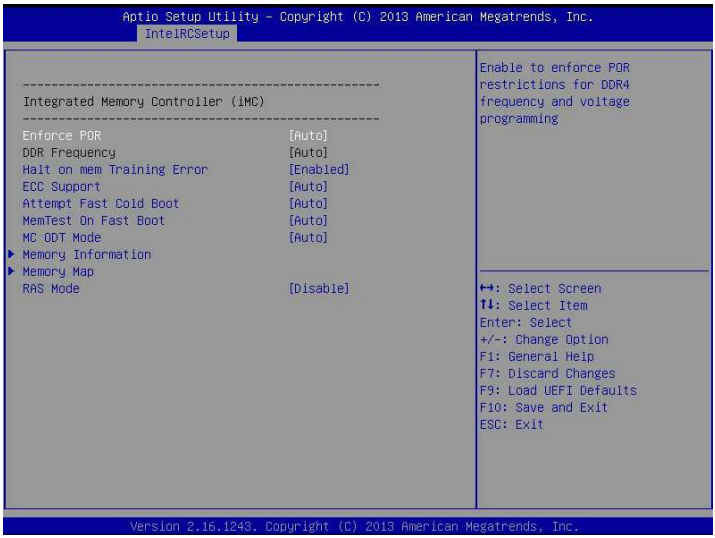
Link Speed Mode

Select the QPI link speed as either the POR speed (Fast) or default speed (Slow).

Link Frequency Select

Allows for selecting the QPI Link Frequency.

3.4.4 Memory Configuration


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
IntelRCSetup
Integrated Memory Controller (iMC)
Enforce POR [Auto]
DDR Frequency [Auto]
Halt on mem Training Error [Enabled]
ECC Support [Auto]
Attempt Fast Cold Boot [Auto]
MemTest On Fast Boot [Auto]
MC ODT Mode [Auto]
Memory Information
Memory Map
RAS Mode [Disable]
Enable to enforce POR restrictions for DDR4 frequency and voltage programming
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Enforce POR

Enable to enforce POR restrictions for DDR4 frequency and voltage programming.

Halt on mem Training Error

Use this item to enable or disable Halt on mem Training Error.

ECC Support

Use this item to enable or disable DDR ECC Support.

Attempt Fast Cold Boot

When enabled, portions of memory reference code will be skipped when it is possible to increase boot speed.

MemTest On Fast Boot

Use this item to enable or disable memory test during fast boot.

MC ODT Mode

Select MC ODT Mode.

Memory Information

Displays memory topology with DIMM population information.

Memory Map

Set memory mapping settings.

Socket Interleave Below 4GB

Splits the 0-4GB address space between two sockets, so that both sockets get a chunk of local memory below 4GB.

Channel Interleaving

Select to configure Channel Interleaving settings.

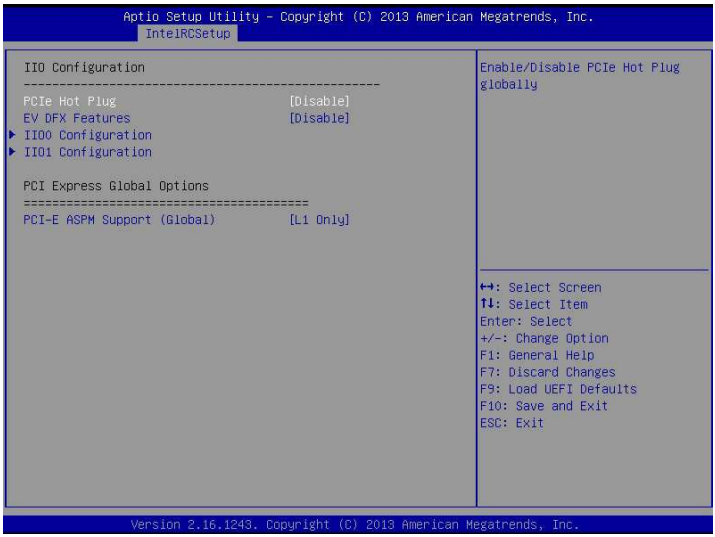
Rank Interleaving

Select to configure Rank Interleaving settings.

RAS Mode

Enable or disable RAS modes. Enabling Sparing and Mirroring is not supported. If enabled, Sparing will be selected.

3.4.5 IIO Configuration



PCIe Hot Plug

Use this item to enable or disable PCIe Hot Plug globally.

EV DFX Features

Set this option to allow DFX Lock Bits to remain clear.

IIO0 Configuration / IIO1 Configuration

IOU2 (IIO PCIe Port 1)

Select PCIe port Bifurcation for selected slot(s).

IOU2 (IIO PCIe Port 2)

Select PCIe port Bifurcation for selected slot(s).

IOU2 (IIO PCIe Port 3)

Select PCIe port Bifurcation for selected slot(s).

Socket 0 PcieD01F0 - Port 1A

Settings related to PCI Express Ports (0/1A/1B/2A/2B/2C/2D/3A/3B/3C/3D/).

Socket 0 PcieD02F0 - Port 2A

Settings related to PCI Express Ports (0/1A/1B/2A/2B/2C/2D/3A/3B/3C/3D/).

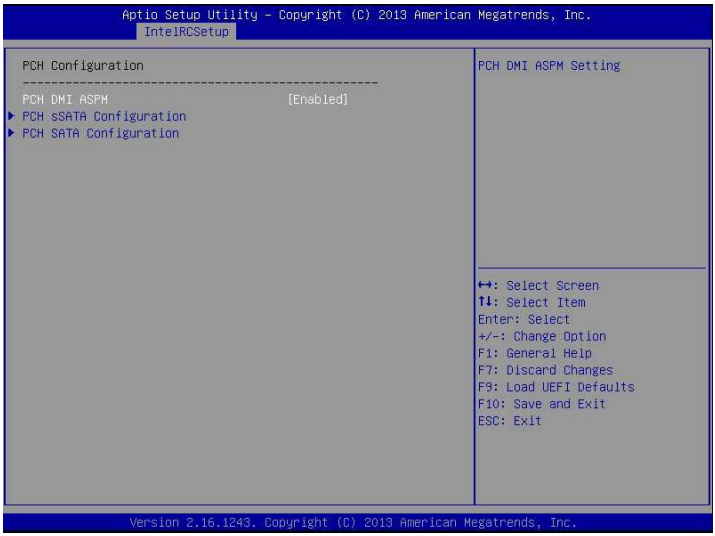
Socket 0 PcieD03F0 - Port 3A

Settings related to PCI Express Ports (0/1A/1B/2A/2B/2C/2D/3A/3B/3C/3D/).

PCI-E ASPM Support (Global)

This option enables or disables the ASPM support for all downstream devices.

3.4.6 PCH Configuration



PCH DMI ASPM

PCH DMI ASPM Setting

PCH sSATA Configuration

sSATA devices and settings

sSATA Controller

Use this item to enable or disable SATA Controller.

Configure sSATA as

Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

Support Aggressive Link Power Mgnt

Use this item to enable or disable SALP.

sSATA Port 0 / 1 / 2 / 3

Port 0 / 1 / 2 / 3

Enable or disable SATA port.

Hot Plug

Designates this port as Hot Plugglable.

Spin Up Device

If enabled for any of ports, Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

sSATA Rx DTLE

Adjust sSATA DTLE DATA Values (0-15).

sSATA Device Type

Identify the SATA port connected to Solid State Drive or Hard Disk Drive.

SATA Port 0 / 1 / 2 / 3

Port 0 / 1 / 2 / 3

Enable or disable SATA port.

Hot Plug

Designates this port as Hot Plugglable.

Spin Up Device

If enabled for any of ports, Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

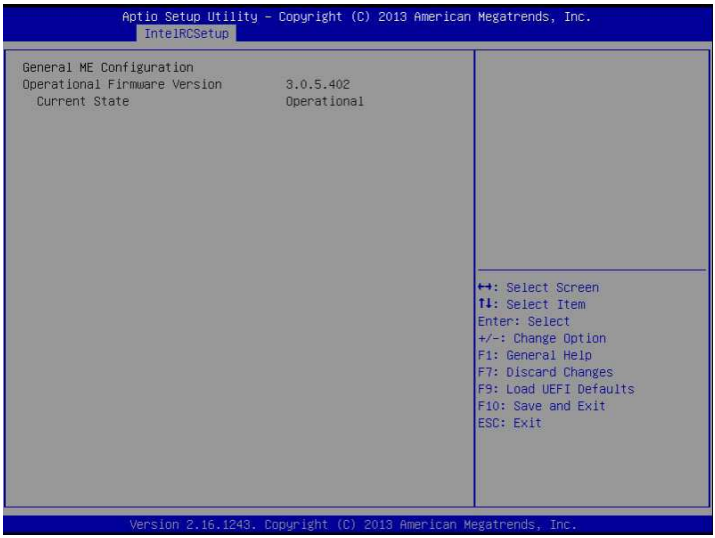
SATA Rx DTLE

Adjust sSATA DTLE DATA Values (0-15).

SATA Device Type

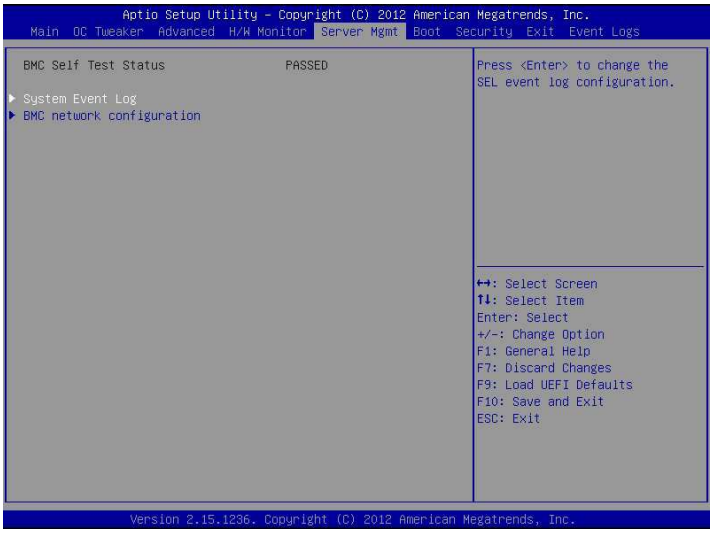
Identify the SATA port connected to Solid State Drive or Hard Disk Drive.

3.4.7 Server ME Configuration



Configure Server ME Technology Parameters

3.5 Server Mgmt


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main OC Tweaker Advanced H/W Monitor Server Mgmt Boot Security Exit Event Logs
BMC Self Test Status PASSED
System Event Log
BMC network configuration
Press <Enter> to change the SEL event log configuration.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Wait For BMC

Wait For BMC response for specified time out. In PILOTII, BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to B<C interfaces.

System Event Log

Press <Enter> to change the SEL event log configuration.

SEL Conponents

Change this to enable ro disable all features of System Event Logging during boot.

BMC Network Configuration

Press <Enter> to configure BMC Network parameters.

Configuration Address Source

Select to configure BMC network parameters statically or dynamically(by BIOS or BMC). Configuration options: [Unspecified], [Static] or [Dynamic].

Unspecified: BMC network parameters are configured by BMC itself.
Static: Manually enter the IP Address, Subnet Mask and Gateway Address in the BIOS for BMC LAN channel configuration.

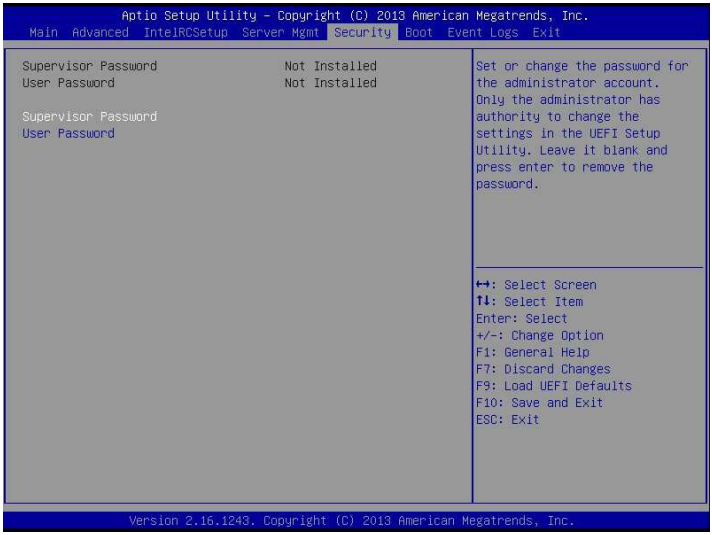
Dynamic: IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server.

To configure BMC network parameters using the BIOS setup, select either [Static] or [Dynamic] option.
To configure BMC network parameters using the BMC web interface, select [Unspecified] option.

When [Dynamic] or [Static] is selected, do NOT modify the BMC network settings on the IPMI web page.

3.6 Security

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IntelRCSetup Server Mgmt Security Boot Event Logs Exit
Supervisor Password Not Installed
User Password Not Installed
Supervisor Password
User Password
Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Supervisor Password

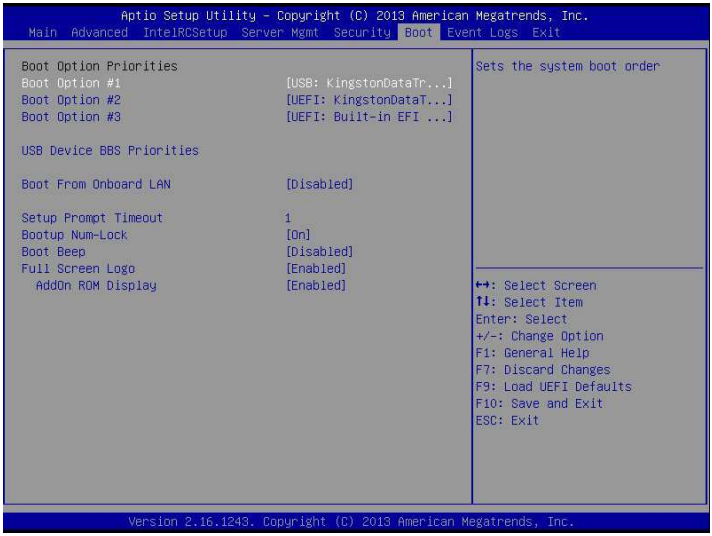
Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

3.7 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IntelRCSetup Server Mgmt Security Boot Event Logs Exit
Boot Option Priorities
Boot Option #1 [USB: KingstonDataTr...]
Boot Option #2 [UEFI: KingstonDataT...]
Boot Option #3 [UEFI: Built-in EFI ...]
USB Device BBS Priorities
Boot From Onboard LAN [Disabled]
Setup Prompt Timeout 1
Bootup Num-Lock [On]
Boot Beep [Disabled]
Full Screen Logo [Enabled]
AddOn ROM Display [Enabled]
Sets the system boot order
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Boot Option #1

Use this item to set the system boot order.

Boot Option #2

Use this item to set the system boot order.

Boot Option #3

Use this item to set the system boot order.

USB Device BBS Priorities

Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means indefinite waiting.

Bootup Num-Lock

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

Boot Beep

Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

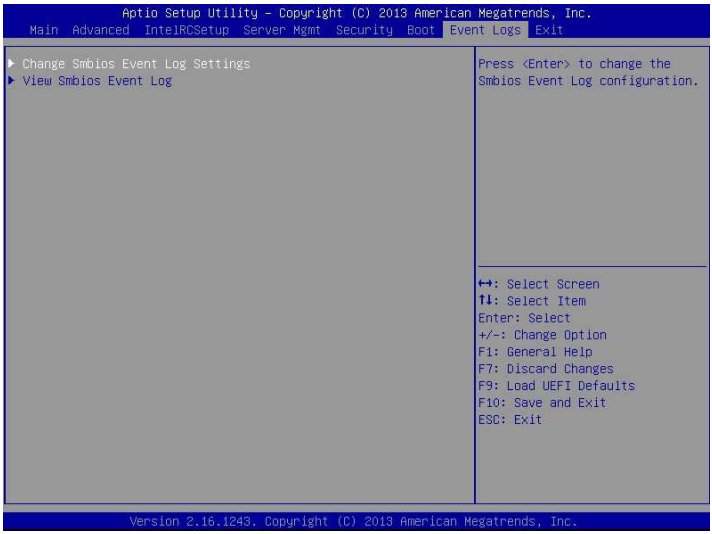
Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

AddOn ROM Display

Use this option to adjust AddOn ROM Display. If you enable the option "Full Screen Logo" but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled].

3.8 Event Logs


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IntelRCSetup Server Mgmt Security Boot Event Logs Exit
Change Smbios Event Log Settings
View Smbios Event Log
Press <Enter> to change the Smbios Event Log configuration.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Change Smbios Event Log Settings

This allows you to configure the Smbios Event Log Settings.

When entering the item, you will see the followings:

Smbios Event Log
Use this item to enable or disable all features of the SMBIOS Event Logging during system boot.

Erase Event Log
The options include [No], [Yes, Next reset] and [Yes, Every reset]. If Yes is selected, all logged events will be erased.

When Log is Full
Use this item to choose options for reactions to a full Smbios Event Log. The options include [Do Nothing] and [Erase Immediately].

MECI (Multiple Event Count Increment)
Use this item to enter the increment value for the multiple event counter. The valid range is from 1 to 33.

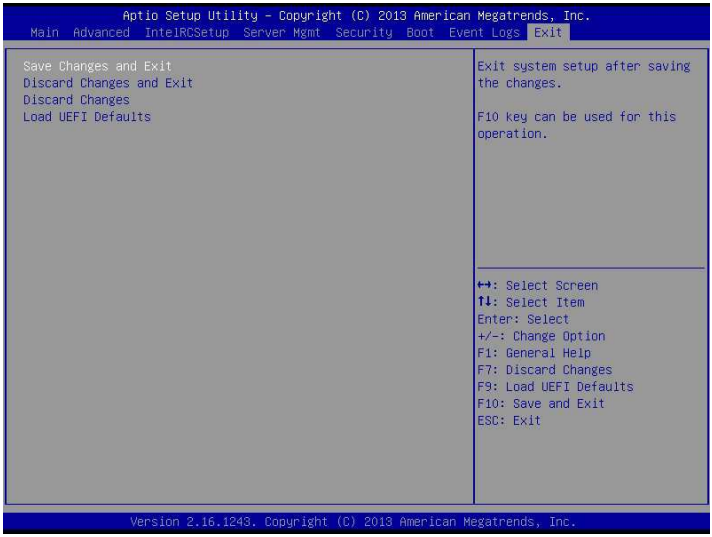
METW (Multiple Event Time Window)
Use this item to specify the number of minutes which must pass between duplicate log entries which utilize a multiple-event counter. The value ranges from 0 to 99 minutes.

View Smbios Event Log

Press <Enter> to view the Smbios Event Log records.

All values changed here do not take effect until computer is restarted.

3.9 Exit Screen


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced IntelRCSetup Server Mgmt Security Boot Event Logs Exit
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load UEFI Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

Save Changes and Exit

When you select this option, the following message "Save configuration changes and exit setup?" will pop-out. Select [Yes] to save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option, the following message "Discard changes and exit setup?" will pop-out. Select [Yes] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, the following message "Discard changes?" will pop-out. Select [Yes] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

Chapter 4 Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® Server 2008 R2 / 2012 / 2012 R2 / Linux compliant. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu does not appear automatically, locate and double click on the file "ASRSetup.exe" from the root folder in the Support CD to display the menu.

4.2.2 Drivers Menu

The Drivers Menu shows the available device's drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the application softwares that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRock Rack or want to know more about ASRock Rack, welcome to visit ASRock Rack's website at http://www.ASRockRack.com; or you may contact your dealer for further information.

Chapter 5 Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot your system.

Always unplug the power cord before adding, removing or changing any hardware components. Failure to do so may cause physical injuries to you and damages to motherboard components.

1. Disconnect the power cable and check whether the PWR LED is off.
2. Unplug all cables, connectors and remove all add-on cards from the motherboard. Make sure that the jumpers are set to default settings.
3. Confirm that there are no short circuits between the motherboard and the chassis.
4. Install a CPU and fan on the motherboard, then connect the chassis speaker and power LED.

If there is no power...

1. Confirm that there are no short circuits between the motherboard and the chassis.
2. Make sure that the jumpers are set to default settings.
3. Check the settings of the 115V/230V switch on the power supply.
4. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.

If there is no video...

1. Try replugging the monitor cables and power cord.
2. Check for memory errors.

If there are memory errors...

1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR4 2133 R-DIMMs.
3. If you have installed more than one DIMM modules, they should be identical with the same brand, speed, size and chip-type.
4. Try inserting different DIMM modules into different slots to identify faulty ones.
5. Check the settings of the 115V/230V switch on the power supply.

Unable to save system setup configurations...

1. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.
2. Confirm whether your power supply provides adaquate and stable power.

Other problems...

1. Try searching keywords related to your problem on ASRock Rack's FAQ page: http://www.asrockrack.com/support

5.2 Technical Support Procedures

If you have tried the troubleshooting procedures mentioned above and the problems are still unsolved, please contact ASRock Rack's technical support with the following information:

1. Your contact information
2. Model name, BIOS version and problem type.
3. System configuration.
4. Problem description.

You may contact ASRock Rack's technical support at:
http://www.asrockrack.com/support/tsd.asp

5.3 Returning Merchandise for Service

For warranty service, the receipt or a copy of your invoice marked with the date of purchase is required. By calling your vendor or going to our RMA website (http://www.asrock.com/support/index.asp?cat=RMA) you may obtain a Returned Merchandise Authorization (RMA) number.
The RMA number should be displayed on the outside of the shipping carton which is mailed prepaid or hand-carried when you return the motherboard to the manufacturer. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty does not cover damages incurred in shipping or from failure due to alteration, misuse, abuse or improper maintenance of products.

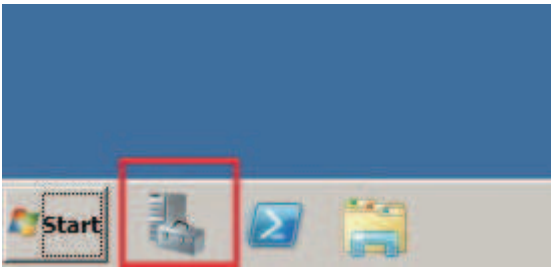
Contact your distributor first for any product related problems during the warranty period.

Chapter 6: Net Framework Installation Guide

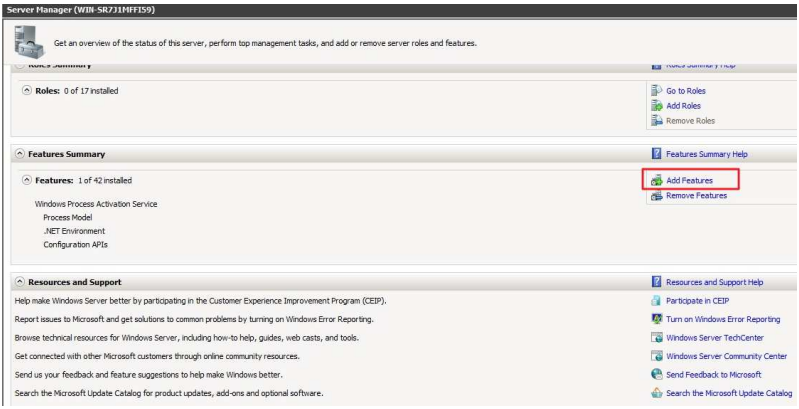
To let Intel® RSTe works properly, it is required to install Net Framework. Please follow the steps below to enable ".Net Framework" feature on Microsoft® Windows® Server 2008 R2.

6.1 Installing .Net Framework 3.5.1 (For Server 2008 R2)

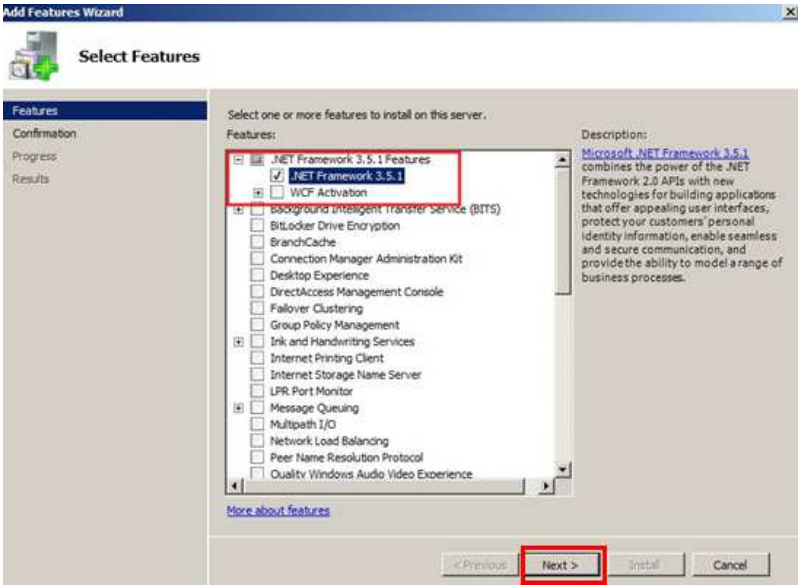
1. Double-click the Server Manager icon in the Windows system tray.



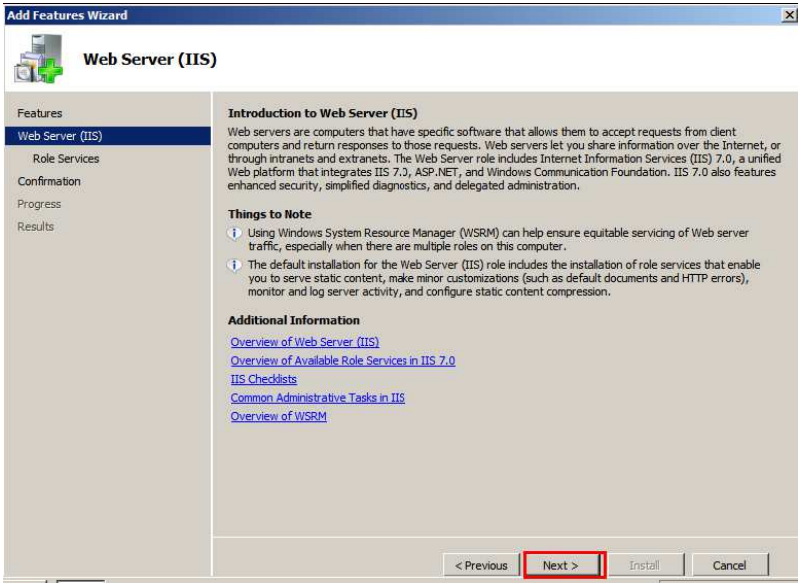
2. Click Add Features in the right hand pane.


Server Manager (WIN-SR7J1MFFIS9)
Get an overview of the status of this server, perform top management tasks, and add or remove server roles and features.
Roles: 0 of 17 installed
Go to Roles
Add Roles
Remove Roles
Features Summary
Features Summary Help
Features: 1 of 42 installed
Add Features
Remove Features
Windows Process Activation Service
Process Model
.NET Environment
Configuration APIs
Resources and Support
Resources and Support Help
Help make Windows Server better by participating in the Customer Experience Improvement Program (CEIP).
Participate in CEIP
Report issues to Microsoft and get solutions to common problems by turning on Windows Error Reporting.
Turn on Windows Error Reporting
Browse technical resources for Windows Server, including how-to help, guides, web casts, and tools.
Windows Server TechCenter
Get connected with other Microsoft customers through online community resources.
Windows Server Community Center
Send us your feedback and feature suggestions to help make Windows better.
Send Feedback to Microsoft
Search the Microsoft Update Catalog for product updates, add-ons and optional software.
Search the Microsoft Update Catalog

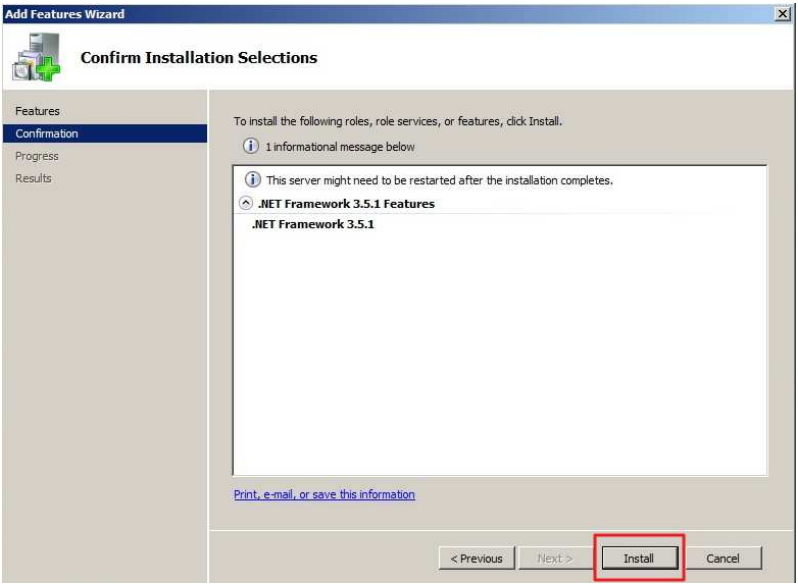
3. Check the box next to .Net Framework 3.5.1 and then click **Next.**


Add Features Wizard
Select Features
Features
Confirmation
Progress
Results
Select one or more features to install on this server.
Features:
.NET Framework 3.5.1 Features
.NET Framework 3.5.1
WCF Activation
Background Intelligent Transfer Service (BITS)
BitLocker Drive Encryption
BranchCache
Connection Manager Administration Kit
Desktop Experience
DirectAccess Management Console
Failover Clustering
Group Policy Management
Ink and Handwriting Services
Internet Printing Client
Internet Storage Name Server
LPR Port Monitor
Message Queuing
Multipath I/O
Network Load Balancing
Peer Name Resolution Protocol
Quality Windows Audio Video Experience
Description:
Microsoft .NET Framework 3.5.1 combines the power of the .NET Framework 2.0 APIs with new technologies for building applications that offer appealing user interfaces, protect your customers' personal identity information, enable seamless and secure communication, and provide the ability to model a range of business processes.
More about features
< Previous
Next >
Install
Cancel

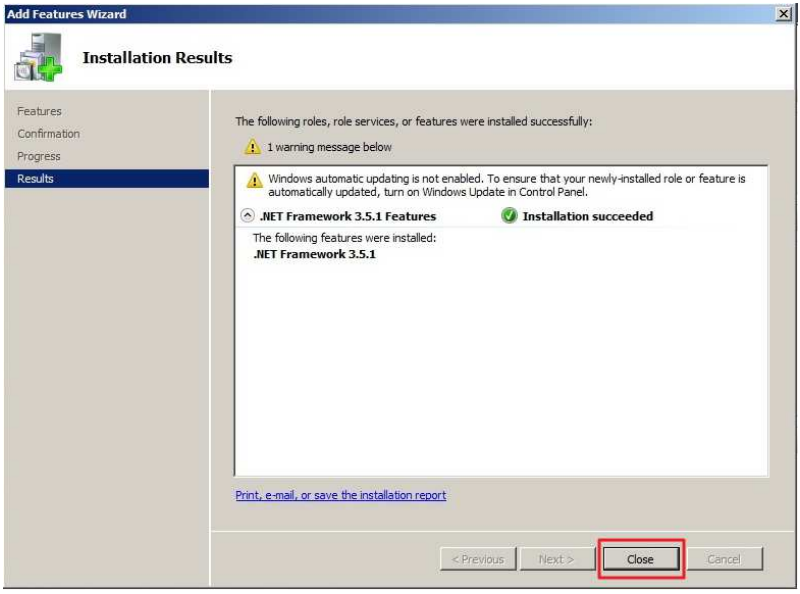
4. Click **Next** to continue.


Add Features Wizard
Web Server (IIS)
Features
Web Server (IIS)
Role Services
Confirmation
Progress
Results
Introduction to Web Server (IIS)
Web servers are computers that have specific software that allows them to accept requests from client computers and return responses to those requests. Web servers let you share information over the Internet, or through intranets and extranets. The Web Server role includes Internet Information Services (IIS) 7.0, a unified Web platform that integrates IIS 7.0, ASP.NET, and Windows Communication Foundation. IIS 7.0 also features enhanced security, simplified diagnostics, and delegated administration.
Things to Note
Using Windows System Resource Manager (WSRM) can help ensure equitable servicing of Web server traffic, especially when there are multiple roles on this computer.
The default installation for the Web Server (IIS) role includes the installation of role services that enable you to serve static content, make minor customizations (such as default documents and HTTP errors), monitor and log server activity, and configure static content compression.
Additional Information
Overview of Web Server (IIS)
Overview of Available Role Services in IIS 7.0
IIS Checklists
Common Administrative Tasks in IIS
Overview of WSRM
< Previous
Next >
Install
Cancel

5. Click **Install** to start installing .Net Framework 3.5.1.



6. After the installation completes, click **Close.**


Add Features Wizard
Installation Results
Features
Confirmation
Progress
Results
The following roles, role services, or features were installed successfully:
1 warning message below
Windows automatic updating is not enabled. To ensure that your newly-installed role or feature is automatically updated, turn on Windows Update in Control Panel.
.NET Framework 3.5.1 Features
Installation succeeded
The following features were installed:
.NET Framework 3.5.1
Print, e-mail, or save the installation report
< Previous
Next >
Close
Cancel